

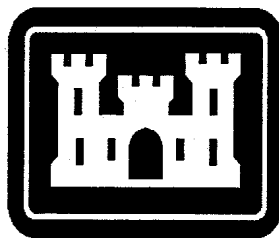
SOLICITATION NO. DACW37-02-B-0016

**FLOOD CONTROL
RED RIVER OF THE NORTH
BRECKENRIDGE, MINNESOTA**

**CONSTRUCTION PROJECT
DOCUMENTS FOR**

**BRECKENRIDGE MN
STAGE 1**

MARCH 2003



**US Army Corps
of Engineers**
St. Paul District

FLOOD CONTROL
RED RIVER OF THE NORTH
WILKIN CO., MN

BRECKENRIDGE MN STAGE 1

TABLE OF CONTENTS

NON-TECHNICAL REQUIREMENTS:

**BIDDING REQUIREMENTS, CONTRACT FORMS, AND
CONDITIONS OF THE CONTRACT**

00010	Standard Form 1442 and Bidding Schedule
00100	Instructions, Conditions, and Notices to Bidders
00600	Representations, Certifications, and Other Statements of Bidders
00700	Contract Clauses
00800	Special Contract Requirements
00830	Attachments

TECHNICAL REQUIREMENTS, SPECIFICATIONS:

DIVISION 01 GENERAL

01000	General
01270	Measurement and Payment
01312	Quality Control System (QCS)
01320	Project Schedule
01330	Submittal Procedures
01355	Environmental Protection
01356	Storm Water Pollution Prevention Measures
01420	Sources for Reference Publications
01451	Contractor Quality Control
01500	Temporary Construction Facilities
01567	Minnesota Pollutant Discharge Elimination System
01572	Construction and Demolition Waste Management
01670	Recycled / Recovered Materials
01780	Closeout Submittals

DIVISION 02 SITE WORK

02230	Clearing and Grubbing
02300	Earthwork
02315	Excavation, Filling And Backfilling For Structures
02316	Excavation, Trenching, and Backfilling for Utility Systems
02370	Soil Surface Erosion Control
02373	Geotextile
02388	Stone Protection (Riprap)
02446	Horizontal Directional Drilling and Pipe Installation
02464	Metal Sheet Piling
02532	Force Mains and Inverted Siphons; Sewer
02620	Subdrainage System
02630	Storm-Drainage System
02710	Temporary Detour and Traffic Control

FLOOD CONTROL
RED RIVER OF THE NORTH
WILKIN CO., MN

BRECKENRIDGE MN STAGE 1

TABLE OF CONTENTS

02720	Aggregate Base Course
02741	Hot-Mix Asphalt (HMA) for Roads
02748	Bituminous Tack and Prime Coats
02754	Concrete Pavements
02763	Pavement Markings
02842	Traffic Barriers
02920	Seeding, Sodding, and Topsoil

DIVISION 03 CONCRETE

03100	Structural Concrete Formwork
03150	Expansion Joints, Contraction Joints, and Waterstops
03190	Concrete Bridges
03200	Concrete Reinforcement
03300	Cast-In-Place Concrete

DIVISION 04 Not Used

DIVISION 05 METALS

05055	Metalwork, Fabrication, Machine Work, Miscellaneous Provisions
05502	Metals: Miscellaneous, Standard Articles, Shop Fabricated Items

DIVISION 06 Not Used

DIVISION 07 Not Used

DIVISION 08 Not Used

DIVISION 09 FINISHES

09900	Paints and Coatings
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DIVISION 10 SPECIALTIES

10430	Exterior Signage
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DIVISION 11 Not Used

DIVISION 12 Not Used

FLOOD CONTROL
RED RIVER OF THE NORTH
WILKIN CO., MN

BRECKENRIDGE MN STAGE 1

TABLE OF CONTENTS

DIVISION 13 Not Used

DIVISION 14 Not Used

DIVISION 15 Not Used

DIVISION 16 Not Used

SOLICITATION, OFFER, AND AWARD <i>(Construction, Alteration, or Repair)</i>	1. SOLICITATION NO. DACW37-02-B-0016	2. TYPE OF SOLICITATION <input checked="checked" type="checkbox"/> SEALED BID (IFB) <input type="checkbox"/> NEGOTIATED (RFP)	3. DATE ISSUED 10-Mar-2003	PAGE OF PAGES 1 OF 171
IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.				
4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO. WB1G67-2212-3587		6. PROJECT NO.	
7. ISSUED BY CONTRACTING DIVISION USACE - ST PAUL 190 5TH STREET E ST PAUL MN 55101-1638 TEL: FAX: 651-290-5706		CODE DACW37	8. ADDRESS OFFER TO <i>(If Other Than Item 7) CODE</i> <div style="border: 1px solid black; padding: 10px; text-align: center; margin: 10px 0;"> See Item 7 </div> TEL: FAX:	
9. FOR INFORMATION CALL:	A. NAME WILLIAM J HURLEY		B. TELEPHONE NO. <i>(Include area code) (NO COLLECT CALLS)</i> 651-290-5416	
SOLICITATION				
NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".				
10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS <i>(Title, identifying no., date):</i> Breckenridge Flood Control Project - Stage 1 Construction This project consists of constructing a diversion channel designed for a 110-year flood event. The channel will divert high flows of the Otter Tail and Bois de Sioux Rivers to the Red River of the North. The channel will run parallel to Highway 75, starting just west of the 11th street bridge, progressing north across Highway 210 and County Road 16, then proceeding northwest across Highway 75 until combining with the Red River of the North. The channel consists of approximately 2.9 miles of new diversion channel. Work related to the diversion channel includes 3 new bridges with related pavement work, a concrete drop structure, and the rip rapping at various locations. Spoil poles will be placed on both sides of the diversion channel for the majority of the channel length. Estimated order of magnitude of the requirement in terms of physical characteristics and estimated price range is between \$5,000,000 and \$10,000,000. This procurement is issued unrestricted under SMALL BUSINESS COMPETITIVE DEMONSTRATION PROGRAM (Public Law 100-656). The North American Industry Classification System (NAICS) Code is 237990; the Small Business Size Standard is \$28,500,000.				
11. The Contractor shall begin performance within <u>10</u> calendar days and complete it by 01 December 2004 after receiving <input type="checkbox"/> award, <input checked="checked" type="checkbox"/> notice to proceed. This performance period is <input checked="checked" type="checkbox"/> mandatory, <input type="checkbox"/> negotiable. <i>(See 52.211-10)</i>				
12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? <i>(If "YES," indicate within how many calendar days after award in Item 12B.)</i> <input checked="checked" type="checkbox"/> YES <input type="checkbox"/> NO			12B. CALENDAR DAYS 10	
13. ADDITIONAL SOLICITATION REQUIREMENTS: A. Sealed offers in original and _____ copies to perform the work required are due at the place specified in Item 8 by <u>02:00 PM</u> <i>(hour)</i> local time <u>08 Apr 2003</u> <i>(date)</i> . If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due. B. An offer guarantee <input checked="checked" type="checkbox"/> is, <input type="checkbox"/> is not required. C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference. D. Offers providing less than <u>60</u> calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.				

SOLICITATION, OFFER, AND AWARD (Continued)*(Construction, Alteration, or Repair)***OFFER (Must be fully completed by offeror)**

14. NAME AND ADDRESS OF OFFEROR <i>(Include ZIP Code)</i>		15. TELEPHONE NO. <i>(Include area code)</i>
		16. REMITTANCE ADDRESS <i>(Include only if different than Item 14)</i> See Item 14
CODE	FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS	SEE SCHEDULE OF PRICES
---------	------------------------

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS*(The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each)*

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER <i>(Type or print)</i>	20B. SIGNATURE	20C. OFFER DATE
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AWARD (To be completed by Government)

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA
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24. SUBMIT INVOICES TO ADDRESS SHOWN IN <i>(4 copies unless otherwise specified)</i>	ITEM	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO <input type="checkbox"/> 10 U.S.C. 2304(c) <input type="checkbox"/> 41 U.S.C. 253(c)
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26. ADMINISTERED BY CODE	27. PAYMENT WILL BE MADE BY: CODE
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CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

<input type="checkbox"/> 28. NEGOTIATED AGREEMENT <i>(Contractor is required to sign this document and return _____ copies to issuing office.)</i> Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications or incorporated by reference in or attached to this contract.	<input type="checkbox"/> 29. AWARD <i>(Contractor is not required to sign this document.)</i> Your offer on this solicitation, is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.
--	--

30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN <i>(Type or print)</i>		31A. NAME OF CONTRACTING OFFICER <i>(Type or print)</i>	
30B. SIGNATURE	30C. DATE	TEL: _____ EMAIL: _____	
		31B. UNITED STATES OF AMERICA BY	31C. AWARD DATE

Table of Contents Sections 00010 through 00800

TABLE OF CONTENTS SECTIONS 00010 THROUGH 00800.....	3
SECTION 00100 - BIDDING SCHEDULE/INSTRUCTIONS TO BIDDERS	22
52.204-6 DATA UNIVERSAL NUMBERING SYSTEM (DUNS) NUMBER (JUN 99).....	22
52.209-4001 BIDDER'S QUALIFICATIONS (APR 1984) FAR 9.105-1.....	22
52.214-3 AMENDMENTS TO INVITATIONS FOR BIDS (DEC 1989).....	23
52.214-4 FALSE STATEMENTS IN BIDS (APR 1984).....	23
52.214-5 SUBMISSION OF BIDS (MAR 1997)	23
52.214-6 EXPLANATION TO PROSPECTIVE BIDDERS (APR 1984).....	24
52.214-7 LATE SUBMISSIONS, MODIFICATIONS, AND WITHDRAWALS OF BIDS (NOV 1999)	24
52.214-18 PREPARATION OF BIDS--CONSTRUCTION (APR 1984).....	25
52.214-19 CONTRACT AWARD--SEALED BIDDING--CONSTRUCTION (AUG 1996).....	25
52.214-34 SUBMISSION OF OFFERS IN THE ENGLISH LANGUAGE (APR 1991)	26
52.214-35 SUBMISSION OF OFFERS IN U.S. CURRENCY (APR 1991).....	26
52.214-4001 INQUIRIES - BID INFORMATION.....	26
52.214-4002 ALL OR NONE QUALIFICATIONS (APR 1984) FAR 14.404-5	27
52.216-1 TYPE OF CONTRACT (APR 1984).....	27
52.225-10 NOTICE OF BUY AMERICAN ACT REQUIREMENT--CONSTRUCTION MATERIALS (MAY 2002)27	
52.232-38 SUBMISSION OF ELECTRONIC FUNDS TRANSFER INFORMATION WITH OFFER (MAY 1999) 28	
52.233-2 SERVICE OF PROTEST (AUG 1996).....	29
52.236-27 SITE VISIT (CONSTRUCTION) (FEB 1995)	29
52.236-4002 WORK PERFORMED BY THE CONTRACTOR.....	30
52.236-4005 UNAVAILABILITY OF UTILITY SERVICES	30
52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998).....	30
252.204-7004 REQUIRED CENTRAL CONTRACTOR REGISTRATION (NOV 2001).....	31
SECTION 00600 - REPRESENTATIONS & CERTIFICATIONS	32
52.203-2 CERTIFICATE OF INDEPENDENT PRICE DETERMINATION (APR 1985).....	32
52.203-11 CERTIFICATION AND DISCLOSURE REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (APR 1991).....	33
52.204-3 TAXPAYER IDENTIFICATION (OCT 1998)	33
52.204-5 WOMEN-OWNED BUSINESS (OTHER THAN SMALL BUSINESS) (MAY 1999)	35
52.209-5 CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS (DEC 2001).....	35
52.219-1 SMALL BUSINESS PROGRAM REPRESENTATIONS (APR 2002) - ALTERNATE I (APR 2002).....	36
52.219-2 EQUAL LOW BIDS. (OCT 1995).....	39
52.219-19 SMALL BUSINESS CONCERN REPRESENTATION FOR THE SMALL BUSINESS COMPETITIVENESS DEMONSTRATION PROGRAM (OCT 2000).....	39
52.222-22 PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (FEB 1999).....	40
52.222-38 COMPLIANCE WITH VETERANS' EMPLOYMENT REPORTING REQUIREMENTS (DEC 2001).....	40
52.223-13 CERTIFICATION OF TOXIC CHEMICAL RELEASE REPORTING (OCT 2000).....	41
252.209-7001 DISCLOSURE OF OWNERSHIP OR CONTROL BY THE GOVERNMENT OF A TERRORIST COUNTRY (MAR 1998).....	41
252.225-7003 INFORMATION FOR DUTY-FREE ENTRY EVALUATION (MAR 1998).....	42

252.225-7017 PROHIBITION ON AWARD TO COMPANIES OWNED BY THE PEOPLE'S REPUBLIC OF CHINA (FEB 2000)	43
252.247-7022 REPRESENTATION OF EXTENT OF TRANSPORTATION BY SEA (AUG 1992)	44
SECTION 00700 - CONTRACT CLAUSES	45
52.202-1 DEFINITIONS (DEC 2001) --ALTERNATE I (MAY 2001)	45
52.202-4001 DEFINITIONS (MAY 1995) EFARS PART 2.101	46
52.203-3 GRATUITIES (APR 1984).....	47
52.203-5 COVENANT AGAINST CONTINGENT FEES (APR 1984).....	48
52.203-7 ANTI-KICKBACK PROCEDURES. (JUL 1995).....	48
52.203-8 CANCELLATION, RESCISSION, AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY (JAN 1997)	50
52.203-10 PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY (JAN 1997).....	50
52.203-12 LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (JUN 1997)	51
52.204-4 PRINTED OR COPIED DOUBLE-SIDED ON RECYCLED PAPER (AUG 2000)	55
52.209-6 PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT (JUL 1995).....	57
52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984) - ALTERNATE I (APR 1984)	57
52.211-12 LIQUIDATED DAMAGES--CONSTRUCTION (SEP 2000)	58
52.211-13 TIME EXTENSIONS (SEP 2000).....	58
52.211-18 VARIATION IN ESTIMATED QUANTITY (APR 1984).....	58
52.214-26 AUDIT AND RECORDS--SEALED BIDDING. (OCT 1997).....	59
52.214-27 PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA - MODIFICATIONS - SEALED BIDDING. (OCT 1997)	60
52.214-28 SUBCONTRACTOR COST OR PRICING DATA - MODIFICATIONS - SEALED BIDDING. (OCT 1997)	61
52.219-4 NOTICE OF PRICE EVALUATION PREFERENCE FOR HUBZONE SMALL BUSINESS CONCERNS (JAN 1999).....	62
52.219-8 UTILIZATION OF SMALL BUSINESS CONCERNS (OCT 2000).....	63
52.219-9 SMALL BUSINESS SUBCONTRACTING PLAN (JAN 2002)--ALTERNATE I (OCT 2001).	65
52.219-16 LIQUIDATED DAMAGES-SUBCONTRACTING PLAN (JAN 1999).....	69
52.222-1 NOTICE TO THE GOVERNMENT OF LABOR DISPUTES (FEB 1997)	70
52.222-3 CONVICT LABOR (AUG 1996)	71
52.222-4 CONTRACT WORK HOURS AND SAFETY STANDARDS ACT - OVERTIME COMPENSATION. (SEP 2000).....	71
52.222-6 DAVIS-BACON ACT (FEB 1995).....	72
52.222-7 WITHHOLDING OF FUNDS (FEB 1988)	74
52.222-8 PAYROLLS AND BASIC RECORDS (FEB 1988).....	74
52.222-9 APPRENTICES AND TRAINEES (FEB 1988)	75
52.222-10 COMPLIANCE WITH COPELAND ACT REQUIREMENTS (FEB 1988)	76
52.222-11 SUBCONTRACTS (LABOR STANDARDS (FEB 1988).....	77
52.222-12 CONTRACT TERMINATION--DEBARMENT (FEB 1988)	77
52.222-13 COMPLIANCE WITH DAVIS-BACON AND RELATED ACT REGULATIONS (FEB 1988).....	77
52.222-14 DISPUTES CONCERNING LABOR STANDARDS (FEB 1988).....	78
52.222-15 CERTIFICATION OF ELIGIBILITY (FEB 1988)	78
52.222-21 PROHIBITION OF SEGREGATED FACILITIES (FEB 1999).....	78
52.222-23 NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (FEB 1999).....	79
52.222-26 EQUAL OPPORTUNITY (APR 2002)	80
52.222-27 AFFIRMATIVE ACTION COMPLIANCE REQUIREMENTS FOR CONSTRUCTION (FEB 1999).....	81

52.222-35	AFFIRMATIVE ACTION FOR DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA (APR 1998)	85
52.222-36	AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES (JUN 1998)	87
52.222-37	EMPLOYMENT REPORTS ON DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA (JAN 1999)	89
52.223-5	POLLUTION PREVENTION AND RIGHT-TO-KNOW INFORMATION (APR 1998)	89
52.223-6	DRUG-FREE WORKPLACE (MAY 2001)	90
52.223-14	TOXIC CHEMICAL RELEASE REPORTING (OCT 2000)	91
52.225-9	BUY AMERICAN ACT—CONSTRUCTION MATERIALS (MAY 2002)	92
52.225-13	RESTRICTIONS ON CERTAIN FOREIGN PURCHASES (JUL 2000)	95
52.226-1	UTILIZATION OF INDIAN ORGANIZATIONS AND INDIAN-OWNED ECONOMIC ENTERPRISES (JUN 2000)	95
52.227-1	AUTHORIZATION AND CONSENT (JUL 1995)	97
52.227-2	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT (AUG 1996)	97
52.227-4	PATENT INDEMNITY--CONSTRUCTION CONTRACTS (APR 1984)	98
52.228-1	BID GUARANTEE (SEP 1996)	98
52.228-2	ADDITIONAL BOND SECURITY (OCT 1997)	98
52.228-11	PLEDGES OF ASSETS (FEB 1992)	99
52.228-14	IRREVOCABLE LETTER OF CREDIT (DEC 1999)	100
52.228-15	PERFORMANCE AND PAYMENT BONDS--CONSTRUCTION (JUL 2000)-	103
52.228-4022	REQUIREMENT FOR BID GUARANTEE (FAR 28.101-2)	104
52.229-3	FEDERAL, STATE, AND LOCAL TAXES (JAN 1991)	104
52.229-5	TAXES--CONTRACTS PERFORMED IN U.S. POSSESSIONS OR PUERTO RICO (APR 1984)	105
52.232-5	PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS (MAY 1997)	105
52.232-17	INTEREST (JUNE 1996)	108
52.232-23	ASSIGNMENT OF CLAIMS (JAN 1986) - ALTERNATE I (APR 1984)	109
52.232-27	PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS (FEB 2002)	109
52.232-33	PAYMENT BY ELECTRONIC FUNDS TRANSFER—CENTRAL CONTRACTOR REGISTRATION (MAY 1999)	115
52.232-35	DESIGNATION OF OFFICE FOR GOVERNMENT RECEIPT OF ELECTRONIC FUNDS TRANSFER INFORMATION (MAY 1999)	117
52.233-1	DISPUTES. (DEC 1998)	118
52.233-3	PROTEST AFTER AWARD (AUG. 1996)	119
52.236-1	PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984)	120
52.236-2	DIFFERING SITE CONDITIONS (APR 1984)	120
52.236-3	SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK (APR 1984)	121
52.236-4	PHYSICAL DATA (APR 1984)	122
52.236-5	MATERIAL AND WORKMANSHIP (APR 1984)	122
52.236-6	SUPERINTENDENCE BY THE CONTRACTOR (APR 1984)	123
52.236-7	PERMITS AND RESPONSIBILITIES (NOV 1991)	123
52.236-8	OTHER CONTRACTS (APR 1984)	123
52.236-9	PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS (APR 1984)	124
52.236-10	OPERATIONS AND STORAGE AREAS (APR 1984)	124
52.236-11	USE AND POSSESSION PRIOR TO COMPLETION (APR 1984)	125
52.236-12	CLEANING UP (APR 1984)	125
52.236-13	ACCIDENT PREVENTION (NOV 1991) – ALTERNATE I (NOV 1991)	125
52.236-15	SCHEDULES FOR CONSTRUCTION CONTRACTS (APR 1984)	126
52.236-16	QUANTITY SURVEYS (APR 1984) - ALTERNATE I (APR 1984)	127
52.236-17	LAYOUT OF WORK (APR 1984)	128
52.236-21	SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (FEB 1997)	128

52.236-26	PRECONSTRUCTION CONFERENCE (FEB 1995)	129
52.242-13	BANKRUPTCY (JUL 1995)	129
52.242-14	SUSPENSION OF WORK (APR 1984).....	130
52.243-4	CHANGES (AUG 1987).....	130
52.244-6	SUBCONTRACTS FOR COMMERCIAL ITEMS (MAY 2002)	131
52.246-12	INSPECTION OF CONSTRUCTION (AUG 1996).....	132
52.246-21	WARRANTY OF CONSTRUCTION (MAR 1994)	133
52.247-34	F.O.B. DESTINATION (NOV 1991).....	134
52.248-3	VALUE ENGINEERING--CONSTRUCTION (FEB 2000).....	135
52.249-2	TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FIXED-PRICE) (SEP 1996) - ALTERNATE I (SEP 1996).....	138
52.249-10	DEFAULT (FIXED-PRICE CONSTRUCTION) (APR 1984).....	141
52.252-2	CLAUSES INCORPORATED BY REFERENCE (FEB 1998).....	142
52.253-1	COMPUTER GENERATED FORMS (JAN 1991).....	142
252.201-7000	CONTRACTING OFFICER'S REPRESENTATIVE (DEC 1991).....	142
252.203-7001	PROHIBITION ON PERSONS CONVICTED OF FRAUD OR OTHER DEFENSE-CONTRACT- RELATED FELONIES (MAR 1999).....	143
252.204-7003	CONTROL OF GOVERNMENT PERSONNEL WORK PRODUCT (APR 1992)	144
252.204-7004	REQUIRED CENTRAL CONTRACTOR REGISTRATION (NOV 2001).....	145
252.205-7000	PROVISION OF INFORMATION TO COOPERATIVE AGREEMENT HOLDERS (DEC 1991).....	146
252.209-7000	ACQUISITION FROM SUBCONTRACTORS SUBJECT TO ONSITE INSPECTION UNDER THE INTERMEDIATE-RANGE NUCLEAR FORCES (INF) TREATY (NOV 1995)	146
252.209-7004	SUBCONTRACTING WITH FIRMS THAT ARE OWNED OR CONTROLLED BY THE GOVERNMENT OF A TERRORIST COUNTRY (MAR 1998).....	147
252.219-7003	SMALL, SMALL DISADVANTAGED AND WOMEN-OWNED SMALL BUSINESS SUBCONTRACTING PLAN (DOD CONTRACTS) (APR. 1996).....	147
252.223-7004	DRUG-FREE WORK FORCE (SEP 1988).....	148
252.223-7006	PROHIBITION ON STORAGE AND DISPOSAL OF TOXIC AND HAZARDOUS.....	149
252.225-7012	PREFERENCE FOR CERTAIN DOMESTIC COMMODITIES (APR 2002).....	150
252.225-7014	PREFERENCE FOR DOMESTIC SPECIALTY METALS (MAR 1998).....	151
252.225-7031	SECONDARY ARAB BOYCOTT OF ISRAEL (JUN 1992).....	152
252.227-7033	RIGHTS IN SHOP DRAWINGS (APR 1966).....	153
252.231-7000	SUPPLEMENTAL COST PRINCIPLES (DEC 1991).....	153
252.236-7000	MODIFICATION PROPOSALS - PRICE BREAKDOWN. (DEC 1991).....	153
252.236-7001	CONTRACT DRAWINGS, MAPS, AND SPECIFICATIONS (AUG 2000).....	154
252.236-7002	OBSTRUCTION OF NAVIGABLE WATERWAYS. (DEC 1991)	155
252.236-7008	CONTRACT PRICES - BIDDING SCHEDULES. (DEC 1991)	155
252.242-7000	POSTAWARD CONFERENCE (DEC 1991).....	156
252.243-7001	PRICING OF CONTRACT MODIFICATIONS (DEC 1991).....	156
252.243-7002	REQUESTS FOR EQUITABLE ADJUSTMENT (MAR 1998).....	156
252.244-7000	SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS (DOD) (MAR 2000).....	157
252.246-7000	MATERIAL INSPECTION AND RECEIVING REPORT (DEC 1991)	158
252.247-7023	TRANSPORTATION OF SUPPLIES BY SEA (MAY 2002)	158
252.247-7024	NOTIFICATION OF TRANSPORTATION OF SUPPLIES BY SEA (MAR 2000)	161
SECTION 00800 - SPECIAL CONTRACT REQUIREMENTS.....		163
52.000-4004	PARTNERING	163
52.212-4003	TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER (OCT 1989) ER 415-1-15 163	
52.214-5000	ARITHMETIC DISCREPANCIES - EFARS.....	164
52.228-4002	INSURANCE	164

52.228-4022	REQUIREMENT FOR BID GUARANTEE (FAR 28.101-2).....	165
52.231-5000	EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE.....	165
52.232-4004	INVOICE PROCEDURES	166
52.232-5001	CONTINUING CONTRACTS (MAR 1995) EFARS.....	164
52.236-15	SCHEDULES FOR CONSTRUCTION CONTRACTS (APR 1984).....	168
52.236-4006	SAFETY AND HEALTH REQUIREMENTS MANUAL INTERIM CHANGES, EM 385-1-1 (APR 2001)	169
52.236-4012	MATERIAL SOURCES	169
52.236-4014	PURCHASE ORDERS	170
52.239-4001	YEAR 2000 COMPLIANCE (FAR 39.106) (JUL 1998)	170
52.246-4001	LABORATORY AND TESTING FACILITIES.....	170
52.249-5000	BASIS FOR SETTLEMENT OF PROPOSALS.....	171

SECTION 00010 - Solicitation Contract Form

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001	General Demolition	1	Lump Sum	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002	Highway 210 & 75 Pavement Removal	4,270	Square Yard	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003	County Road 16 Pavement Removal	2,200	Square Yard	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0004	Traffic Control	1	Lump Sum	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0005	Sheetpile	3,500	Square Foot	_____.	_____.
0006	Temporary Erosion Protection	1	Lump Sum	_____.	_____.
0007	4" Perforated HDPE Pipe	3,080	Linear Foot	_____.	_____.
0008	Subgrade Preparation	8,870	Square Yard	_____.	_____.
0009	Geotextile Fabric (Roads)	8,870	Square Yard	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0010	Select Granular Borrow	9,620	Cubic Yard		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0011	Aggregate Base Class V	7,700	Net Ton (2,000 LB)		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0012	Pavement Marking	8,250	Linear Foot		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0013	Bituminous Tack and Prime Coats	1,290	Gallon		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0014	Bituminous Base	2,210	Net Ton (2,000 LB)		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0015	Bituminous Wearing Course	1,610	Net Ton (2,000 LB)	_____.	_____.
0016	Shouldering Aggregate	670	Net Ton (2,000 LB)	_____.	_____.
0017	Concrete Pavement	430	Cubic Yard	_____.	_____.
0018	R6 Riprap	15,976	Net Ton (2,000 LB)	_____.	_____.
0019	R7 Riprap	800	Net Ton (2,000 LB)	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0020	R8 Riprap	3,040	Net Ton (2,000 LB)	_____.	_____.
0021	R12 Riprap	5,120	Net Ton (2,000 LB)	_____.	_____.
0022	B1 Bedding	5,920	Net Ton (2,000 LB)	_____.	_____.
0023	B2 Bedding	2,088	Net Ton (2,000 LB)	_____.	_____.
0024	Geotextile Fabric (Riprap)	5,999	Square Yard	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0025	Side Inlet Structure A	1	Lump Sum	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0026	Side Inlet Structure B	1	Lump Sum	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0027	Side Inlet Structure C	1	Lump Sum	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0028	Side Inlet Structure D	1	Lump Sum	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0029	Side Inlet Structure E	1	Lump Sum	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0030	County Road 16 Culvert Crossing	1	Lump Sum		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0031	Driveway Culvert Near Diversion Inlet	1	Lump Sum		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0032	Highway 210 Bridge	1	Lump Sum		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0033	County Road 16 Bridge	1	Lump Sum		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0034	Highway 75 Bridge	1	Lump Sum		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0035	Bridge Piling	9,985	Linear Foot		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0036	Bridge Test Piles	12	Each		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0037	Common Excavation	1,082,030	Cubic Yard		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0038	Compact Fill	9,300	Cubic Yard		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0039	Semi-Compacted Fill	4,800	Cubic Yard		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0040	Clearing and Grubbing	1	Lump Sum		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0041	Stripping	270,071	Cubic Yard		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0042	Topsoil	253,000	Cubic Yard		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0043	Seed w/Fertilizer and Mulch	100	Acre		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0044	Forcemain removal	1	Lump Sum		

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0045	Forcemain	1	Lump Sum	_____.	_____.
0046	Forcemain Gate Valves	2	Each	_____.	_____.
0047	Interior Drainage Ditching	1	Lump Sum	_____.	_____.
0048	County Road 16 Drop Structure	1	Lump Sum	_____.	_____.
0049	Exterior Signage	1	Lump Sum	_____.	_____.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0050	Haul and Stockpile Excess Topsoil	17,000	Cubic Yard		

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0051	Bonds (Performance and Payment)	1	Lump Sum		

Total Price for Items No. 0001 through 0051: _____

BID SCHEDULE NOTES

1. EFFECTIVE MAY 31, 1998, ALL CONTRACTORS MUST REGISTER WITH THE DEFENSE CENTRAL CONTRACTOR REGISTRATION (CCR) IN ORDER TO RECEIVE ANY CONTRACT AWARD. (other than those made via the Government credit card program). Contractors may register on line at www.ccr2000.com See Clause 252.204-7004 in Section 00100.
2. FACSIMILE OF BIDS/PROPOSALS AND FACSIMILE OF MODIFICATIONS THERETO, WILL NOT BE ACCEPTED.
3. All Quantities are estimated except where unit is given as "EA" (EACH) or "LS" (LUMP SUM).
4. NOTICE TO LARGE BUSINESS: The U.S. Army Corps of Engineers, St. Paul District, is committed to participation of Small Business, Small Disadvantaged Business and Women-Owned Small Business in the performance of work under this solicitation and resultant contract.

Your attention is directed to the solicitation clauses 52.219-8 entitled "Utilization of Small, Small Disadvantaged and Women-Owned Small Business Concerns", 52.219-9 Alt I entitled "Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan," and 52.219-7003 entitled "Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (DOD Contracts)".

If you are a large business and the apparent low bidder with a bid exceeding \$1,000,000, submission of a Subcontracting Plan in accordance with above clauses will be required. The Contracting Officer will review the plan using the following goals to assure that it represents your best efforts to maximize subcontracting opportunities. Award will not be made until the Contracting Officer approves the Subcontracting Plan.

The following subcontracting goals are informational only and not legally binding but are considered reasonable and achievable during the resultant contract from this solicitation. The goals expressed in percent of total planned subcontracting dollars are:

Small	57.2%
Small Disadvantaged Business	8.9%
Women-Owned Small Business	8.1%
HUBZone Small Business	3.0%
Service-Disabled Veteran-owned Small Business	3.0%
Subcontract Reporting (SF 294 & SF 295)	100.0%

5. The apparent low bidder will be requested to provide the following information as soon as possible after bid opening:
 - a. A Financial Statement, to include a balance sheet and income statement, and
 - b. A Bank Certification of Financial Capability (line of credit).

This information will be treated as confidential. The financial statements should be not over 60 days old. If over 60 days old, a certification should be attached stating that the financial condition of the firm is substantially the same or, if not the same, the changes that have taken place.

6. All extensions of the unit prices shown will be subject to verification by the Government. In case of a discrepancy between the unit price and the extension, the unit price will govern.
7. The original bid/proposal and any modifications must be complete as to all the items on the schedule. Award will be made to that bidder whose bid is most advantageous to the Government, based on price and the price related factors included in the solicitation.
8. Unbalanced Bids. The government may reject as nonresponsive any bid that is materially unbalanced between contract line item numbers or sub-items on the bidding schedule. A bid is materially unbalanced when it is based on prices that are significantly less than cost for some work and prices that are overstated, in relation to cost, for other work. A materially unbalanced bid may be rejected if the Contracting Officer has a reasonable doubt as to whether the bid will result in the lowest overall cost to the government even though it may be the low evaluated bid. Additionally, a bid that is so unbalanced so as to be tantamount to an advance payment will be rejected as nonresponsive even if acceptance of the bid would result in the lowest overall cost to the government.
9. Any prospective bidder desiring an explanation or interpretation of the solicitation, drawings, specifications, etc., must request it in writing in accordance with Section 00100, Contract Clause "Explanation To Prospective Bidders", not later than 10 days prior to bid opening. Questions can be faxed to the contract specialist at (651) 290-5706. Questions received after the deadline may not be answered prior to bid submittal.
10. Funding for this contract is contingent upon the conditions stated in Section 00800, Clause No. 52.232-5001, Continuing Contracts.
11. The addresses, phone numbers, and Internet address (if available) for references cited in these specifications are listed in the Corps of Engineer Guide Specification (CEGS) 01090 SOURCES FOR REFERENCE PUBLICATIONS. CEGS 01090 is available on the TECHINFO page of the Corps of Engineers Huntsville District Internet site at: <http://w2.hnd.usace.army.mil/>.
12. Any forthcoming amendments will only be available on this web site. E-mail notifications will be sent upon issuance of any amendments to all registered firms. E-mail message notifications may not be reliable based on system constraints. It is therefore recommended that each registered firm check this web site periodically for updates. A paper hard copy of each amendment will not be mailed unless specifically requested in writing.
13. Bid Bonds
 - a. It is the responsibility of the bidder to include an acceptable bid guarantee with its bid. This bid note does not provide bidders with an all-inclusive checklist for submitting an acceptable bid bond – rather, it provides some “lessons learned” information as to the unacceptability of photocopied bid bonds.
 - b. This solicitation requires bidders to submit a bid guarantee along with their bids (see clause 52.228-1). One acceptable form of bid guarantee is a bid bond. For a bid to be responsive, the bid bond accompanying the bid must unequivocally bind the bonding company – if it does not, the bid must be rejected as nonresponsive. Please note that a nonresponsive bid may not be corrected after bid opening to make it responsive – it must be rejected. The Contracting Officer has the authority and responsibility to determine whether the bid bond and its accompanying documentation clearly show that the person(s) executing the bid bond on behalf of the surety have the authority to unequivocally bind the bonding company. In order for a bid bond to be acceptable, it must be accompanied by a valid power-of-attorney issued by the surety (the bonding company, not the insurance agency writing the bond).
 - c. Special Note to all bidders: This paragraph has been revised from previous bid notes.

Photocopied or faxed powers-of-attorney are not acceptable. In order for a power-of-attorney accompanying a bid bond to be acceptable, it must be: (i) an original power-of-attorney (containing all original signatures) or (ii) a copy of a power-of-attorney accompanied by an original certification (original means original signature) by the secretary (or other authorized officer) of the surety stating that the copied power-of-attorney is still in full force and effect as of the date of the certification and has not been revoked. An original signature is one that (I) has been added at the time of the certification and (II) is manually affixed to the power of attorney (not computer generated). The presence of an original seal (a raised, crimped corporate seal or a paper or foil corporate seal that is manually attached) at the certification block of a power-of-attorney is not a substitute for an original signature.

14. For purposes of the clause entitled “52.219-4 -- Notice of Price Evaluation Preference for HUBZone Small Business Concerns (Jan 1999)”, the term “otherwise successful offer” means the lowest responsive bid from a responsible bidder prior to the application of any evaluation preference required by this clause.

The solicitation clause FAR 52.219-4 expressed that Small Disadvantaged Business (SDB) firms would receive both the HUBZone and SDB evaluation preference adjustments (See FAR clause 52.219-23). Guidance from the Office of the Under Secretary of Defense provides that DOD contracting activities, including the Department of the Army, shall suspend the use of price evaluation adjustments for SDB businesses in DOD Acquisitions, as prescribed in FAR subpart 19.11.

Therefore the clause 52.219-23 is not contained in this solicitation and no SDB evaluation preference adjustment will be utilized

SECTION 00100 - Bidding Schedule/Instructions to Bidders

CLAUSES INCORPORATED BY FULL TEXT

52.204-6 DATA UNIVERSAL NUMBERING SYSTEM (DUNS) NUMBER (JUN 99)

(a) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" followed by the DUNS number that identifies the offeror's name and address exactly as stated in the offer.

(b) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one. A DUNS number will be provided immediately by telephone at no charge to the offeror. For information on obtaining a DUNS number, the offeror, if located within the United States, should call Dun and Bradstreet at 1-800-333-0505. The offeror should be prepared to provide the following information:

- (1) Company name.
- (2) Company address.
- (3) Company telephone number.
- (4) Line of business.
- (5) Chief executive officer/key manager.
- (6) Date the company was started.
- (7) Number of people employed by the company.
- (8) Company affiliation.

(c) Offerors located outside the United States may obtain the location and phone number of the local Dun and Bradstreet Information Services office from the Internet Home Page at <http://www.customerservice@dnb.com>. If an offeror is unable to locate a local service center, it may send an e-mail to Dun and Bradstreet at globalinfo@mail.dnb.com.

(End of provision)

**52.209-4001 BIDDER'S QUALIFICATIONS (APR 1984) FAR
9.105-1**

Before a bid is considered for award, the bidder may be requested by the Government to submit a statement regarding his previous experience in performing comparable work, his business and technical organization, financial resources, and plant available to be used in performing the work.

52.214-3 *AMENDMENTS TO INVITATIONS FOR BIDS (DEC 1989)*

- (a) If this solicitation is amended, then all terms and conditions which are not modified remain unchanged.
- (b) Bidders shall acknowledge receipt of any amendment to this solicitation (1) by signing and returning the amendment, (2) by identifying the amendment number and date in the space provided for this purpose on the form for submitting a bid, (3) by letter or telegram, or (4) by facsimile, if facsimile bids are authorized in the solicitation. The Government must receive the acknowledgment by the time and at the place specified for receipt of bids.

(End of provision)

52.214-4 *FALSE STATEMENTS IN BIDS (APR 1984)*

Bidders must provide full, accurate, and complete information as required by this solicitation and its attachments. The penalty for making false statements in bids is prescribed in 18 U.S.C. 1001.

(End of provision)

52.214-5 *SUBMISSION OF BIDS (MAR 1997)*

- (a) Bids and bid modifications shall be submitted in sealed envelopes or packages (unless submitted by electronic means) (1) addressed to the office specified in the solicitation, and (2) showing the time and date specified for receipt, the solicitation number, and the name and address of the bidder.
- (b) Bidders using commercial carrier services shall ensure that the bid is addressed and marked on the outermost envelope or wrapper as prescribed in subparagraphs (a)(1) and (2) of this provision when delivered to the office specified in the solicitation.
- (c) Telegraphic bids will not be considered unless authorized by the solicitation; however, bids may be modified or withdrawn by written or telegraphic notice.
- (d) Facsimile bids, modifications, or withdrawals, will not be considered unless authorized by the solicitation.

(e) Bids submitted by electronic commerce shall be considered only if the electronic commerce method was specifically stipulated or permitted by the solicitation.

(End of provision)

52.214-6 EXPLANATION TO PROSPECTIVE BIDDERS (APR 1984)

Any prospective bidder desiring an explanation or interpretation of the solicitation, drawings, specifications, etc., must request it in writing soon enough to allow a reply to reach all prospective bidders before the submission of their bids. Oral explanations or instructions given before the award of a contract will not be binding. Any information given a prospective bidder concerning a solicitation will be furnished promptly to all other prospective bidders as an amendment to the solicitation, if that information is necessary in submitting bids or if the lack of it would be prejudicial to other prospective bidders.

(End of provision)

52.214-7 LATE SUBMISSIONS, MODIFICATIONS, AND WITHDRAWALS OF BIDS (NOV 1999)

(a) Bidders are responsible for submitting bids, and any modifications or withdrawals, so as to reach the Government office designated in the invitation for bids (IFB) by the time specified in the IFB. If no time is specified in the IFB, the time for receipt is 4:30 p.m., local time, for the designated Government office on the date that bids are due.

(b)(1) Any bid, modification, or withdrawal received at the Government office designated in the IFB after the exact time specified for receipt of bids is "late" and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late bid would not unduly delay the acquisition; and--

(i) If it was transmitted through an electronic commerce method authorized by the IFB, it was received at the initial point of entry to the Government infrastructure not later than 5:00 p.m. one working day prior to the date specified for receipt of bids; or

(ii) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of bids and was under the Government's control prior to the time set for receipt of bids.

(2) However, a late modification of an otherwise successful bid that makes its terms more favorable to the Government, will be considered at any time it is received and may be accepted.

(c) Acceptable evidence to establish the time of receipt at the Government installation includes the time/date stamp of that installation on the bid wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

(d) If an emergency or unanticipated event interrupts normal Government processes so that bids cannot be received at the Government office designated for receipt of bids by the exact time specified in the IFB and urgent Government

requirements preclude amendment of the IFB, the time specified for receipt of bids will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.

(e) Bids may be withdrawn by written notice received at any time before the exact time set for receipt of bids. If the IFB authorizes facsimile bids, bids may be withdrawn via facsimile received at any time before the exact time set for receipt of bids, subject to the conditions specified in the provision at 52.214-31, Facsimile Bids. A bid may be withdrawn in person by a bidder or its authorized representative if, before the exact time set for receipt of bids, the identity of the person requesting withdrawal is established and the person signs a receipt for the bid.

(End of provision)

52.214-18 PREPARATION OF BIDS--CONSTRUCTION (APR 1984)

(a) Bids must be (1) submitted on the forms furnished by the Government or on copies of those forms, and (2) manually signed. The person signing a bid must initial each erasure or change appearing on any bid form.

(b) The bid form may require bidders to submit bid prices for one or more items on various bases, including--

(1) Lump sum bidding;

(2) Alternate prices;

(3) Units of construction; or

(4) Any combination of subparagraphs (1) through (3) above.

(c) If the solicitation requires bidding on all items, failure to do so will disqualify the bid. If bidding on all items is not required, bidders should insert the words "no bid" in the space provided for any item on which no price is submitted.

(d) Alternate bids will not be considered unless this solicitation authorizes their submission.

(End of provision)

52.214-19 CONTRACT AWARD--SEALED BIDDING--CONSTRUCTION (AUG 1996)

(a) The Government will evaluate bids in response to this solicitation without discussions and will award a contract to the responsible bidder whose bid, conforming to the solicitation, will be most advantageous to the Government, considering only price and the price-related factors specified elsewhere in the solicitation.

(b) The Government may reject any or all bids, and waive informalities or minor irregularities in bids received.

(c) The Government may accept any item or combination of items, unless doing so is precluded by a restrictive limitation in the solicitation or the bid.

(d) The Government may reject a bid as nonresponsive if the prices bid are materially unbalanced between line items or subline items. A bid is materially unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated in relation to cost for other work, and if there is a reasonable doubt that the bid will result in the lowest overall cost to the Government even though it may be the low evaluated bid, or if it is so unbalanced as to be tantamount to allowing an advance payment.

(End of provision)

52.214-34 SUBMISSION OF OFFERS IN THE ENGLISH LANGUAGE (APR 1991)

Offers submitted in response to this solicitation shall be in the English language. Offers received in other than English shall be rejected.

(End of provision)

52.214-35 SUBMISSION OF OFFERS IN U.S. CURRENCY (APR 1991)

Offers submitted in response to this solicitation shall be in terms of U.S. dollars. Offers received in other than U.S. dollars shall be rejected.

(End of provision)

52.214-4001 INQUIRIES - BID INFORMATION

(a) Inquiries:

Any questions regarding this solicitation should be directed to Bill Hurley, Contract Specialist, at telephone number (651) 290-5416 (collect calls not accepted). It is requested that all technical questions on the plans and specifications be submitted to the Contract Specialist by facsimile transmission to (651) 290-5706.

The Planholder's List and bid results can be found on the St. Paul District web site at <http://www.mvp.usace.army.mil> (click on "Contracting/Bidders Info", then "Electronic Bid Solicitations").

(b) Bid Depository/Bid Opening Information:

Bids must be deposited prior to the date and time set for opening of bids. The bid depository is located in the Contracting Division, 6th Floor, of the St. Paul District, Corps of Engineers Centre, 190 Fifth Street East, St. Paul, Minnesota 55101-1638. A public bid opening will be held at the same location.

52.214-4002 ALL OR NONE QUALIFICATIONS (APR 1984) FAR 14.404-5

A bidder/offeror must quote on all items in this solicitation to be eligible for award. The Government will award on a “All or None” basis. Evaluation of bids/offers will be based, among other factors, upon the total price quoted for all items.

52.216-1 TYPE OF CONTRACT (APR 1984)

The Government contemplates award of a firm-fixed price contract resulting from this solicitation.

(End of clause)

**52.225-10 NOTICE OF BUY AMERICAN ACT REQUIREMENT--
CONSTRUCTION MATERIALS (MAY 2002)**

(a) Definitions. Construction material, domestic construction material, and foreign construction material, as used in this provision, are defined in the clause of this solicitation entitled “Buy American Act--Construction Materials” (Federal Acquisition Regulation (FAR) clause 52.225-9).

(b) Requests for determinations of inapplicability. An offeror requesting a determination regarding the inapplicability of the Buy American Act should submit the request to the Contracting Officer in time to allow a determination before submission of offers. The offeror shall include the information and applicable supporting data required by paragraphs (c) and (d) of the clause at FAR 52.225-9 in the request. If an offeror has not requested a determination regarding the inapplicability of the Buy American Act before submitting its offer, or has not received a response to a previous request, the offeror shall include the information and supporting data in the offer.

(c) Evaluation of offers. (1) The Government will evaluate an offer requesting exception to the requirements of the Buy American Act, based on claimed unreasonable cost of domestic construction material, by adding to the offered

price the appropriate percentage of the cost of such foreign construction material, as specified in paragraph (b)(3)(i) of the clause at FAR 52.225-9.

(2) If evaluation results in a tie between an offeror that requested the substitution of foreign construction material based on unreasonable cost and an offeror that did not request an exception, the Contracting Officer will award to the offeror that did not request an exception based on unreasonable cost.

(d) Alternate offers.

(1) When an offer includes foreign construction material not listed by the Government in this solicitation in paragraph (b)(2) of the clause at FAR 52.225-9, the offeror also may submit an alternate offer based on use of equivalent domestic construction material.

(2) If an alternate offer is submitted, the offeror shall submit a separate Standard Form 1442 for the alternate offer, and a separate price comparison table prepared in accordance with paragraphs (c) and (d) of the clause at FAR 52.225-9 for the offer that is based on the use of any foreign construction material for which the Government has not yet determined an exception applies.

(3) If the Government determines that a particular exception requested in accordance with paragraph (c) of the clause at FAR 52.225-9 does not apply, the Government will evaluate only those offers based on use of the equivalent domestic construction material, and the offeror shall be required to furnish such domestic construction material. An offer based on use of the foreign construction material for which an exception was requested--

(i) Will be rejected as nonresponsive if this acquisition is conducted by sealed bidding; or

(ii) May be accepted if revised during negotiations.

(End of provision)

52.232-38 SUBMISSION OF ELECTRONIC FUNDS TRANSFER INFORMATION WITH OFFER (MAY 1999)

The offeror shall provide, with its offer, the following information that is required to make payment by electronic funds transfer (EFT) under any contract that results from this solicitation. This submission satisfies the requirement to provide EFT information under paragraphs (b)(1) and (j) of the clause at 52.232-34, Payment by Electronic Funds Transfer--Other than Central Contractor Registration.

(1) The solicitation number (or other procurement identification number).

(2) The offeror's name and remittance address, as stated in the offer.

(3) The signature (manual or electronic, as appropriate), title, and telephone number of the offeror's official authorized to provide this information.

(4) The name, address, and 9-digit Routing Transit Number of the offeror's financial agent.

(5) The offeror's account number and the type of account (checking, savings, or lockbox).

(6) If applicable, the Fedwire Transfer System telegraphic abbreviation of the offeror's financial agent.

(7) If applicable, the offeror shall also provide the name, address, telegraphic abbreviation, and 9-digit Routing Transit Number of the correspondent financial institution receiving the wire transfer payment if the offeror's financial agent is not directly on-line to the Fedwire and, therefore, not the receiver of the wire transfer payment.

(End of provision)

52.233-2 SERVICE OF PROTEST (AUG 1996)

- (a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from

U.S. Army Corps of Engineers
Contracting Division
Attn: Contracting Officer
190 East Fifth Street
St. Paul, Minnesota 55101-1638

- (b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(End of provision)

52.236-27 SITE VISIT (CONSTRUCTION) (FEB 1995)

- (a) The clauses at 52.236-2, Differing Site Conditions, and 52.236-3, Site Investigations and Conditions Affecting the Work, will be included in any contract awarded as a result of this solicitation. Accordingly, offerors or quoters are urged and expected to inspect the site where the work will be performed.

- (b) Site visits may be arranged during normal duty hours by contacting:

Name: Mike Evenson

Address: Fargo Residents Office
15 So. 21st Street, Suite 103, Federal Bldg.
Fargo, ND 58103

Telephone: (701) 451-0888

(End of provision)

52.236-4002 WORK PERFORMED BY THE CONTRACTOR

The successful bidder must furnish the Contracting Officer within 10 days after the award, the items of work which he will perform with his own forces, the percentage of the total work this represents, and the estimated cost thereof. (See Section 00700, clause entitled ("Performance of Work by the Contractor").

52.236-4005 UNAVAILABILITY OF UTILITY SERVICES

The responsibility shall be upon the Contractor to provide and maintain at its expense, adequate utilities for its use for construction and domestic consumption, and to install and maintain necessary connections and lines for same, but only at such locations and in such manner as may be approved by the Contracting Officer. Before final acceptance, temporary connections and lines installed by the Contractor shall be removed in a manner satisfactory to the Contracting Officer.

52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

www.arnet.gov/far

(End of provision)

252.204-7004 REQUIRED CENTRAL CONTRACTOR REGISTRATION (NOV 2001)

(a) Definitions.

As used in this clause--

(1) Central Contractor Registration (CCR) database means the primary DoD repository for contractor information required for the conduct of business with DoD.

(2) Data Universal Numbering System (DUNS) number means the 9-digit number assigned by Dun and Bradstreet Information Services to identify unique business entities.

(3) Data Universal Numbering System +4 (DUNS+4) number means the DUNS number assigned by Dun and Bradstreet plus a 4-digit suffix that may be assigned by a parent (controlling) business concern. This 4-digit suffix may be assigned at the discretion of the parent business concern for such purposes as identifying subunits or affiliates of the parent business concern.

(4) Registered in the CCR database means that all mandatory information, including the DUNS number or the DUNS+4 number, if applicable, and the corresponding Commercial and Government Entity (CAGE) code, is in the CCR database; the DUNS number and the CAGE code have been validated; and all edits have been successfully completed.

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee must be registered in the CCR database prior to award, during performance, and through final payment of any contract resulting from this solicitation, except for awards to foreign vendors for work to be performed outside the United States.

(2) The offeror shall provide its DUNS or, if applicable, its DUNS+4 number with its offer, which will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(3) Lack of registration in the CCR database will make an offeror ineligible for award.

(4) DoD has established a goal of registering an applicant in the CCR database within 48 hours after receipt of a complete and accurate application via the Internet. However, registration of an applicant submitting an application through a method other than the Internet may take up to 30 days. Therefore, offerors that are not registered should consider applying for registration immediately upon receipt of this solicitation.

(c) The Contractor is responsible for the accuracy and completeness of the data within the CCR, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to confirm on an annual basis that its information in the CCR database is accurate and complete.

(d) Offerors and contractors may obtain information on registration and annual confirmation requirements by calling 1-888-227-2423, or via the Internet at <http://www.ccr.gov>.

(End of clause)

SECTION 00600 - Representations & Certifications

CLAUSES INCORPORATED BY FULL TEXT

52.203-2 CERTIFICATE OF INDEPENDENT PRICE DETERMINATION (APR 1985)

(a) The offeror certifies that --

(b) The prices in this offer have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other offeror or competitor relating to --

(i) Those prices,

(1) The intention to submit an offer, or

(iii) The methods or factors used to calculate the prices offered:

(2) The prices in this offer have not been and will not be knowingly disclosed by the offeror, directly or indirectly, to any other offeror or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the offeror to induce any other concern to submit or not to submit an offer for the purpose of restricting competition.

(b) Each signature on the offer is considered to be a certification by the signatory that the signatory --

(1) Is the person in the offeror's organization responsible for determining the prices offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision; or

(2) (i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision _____ (insert full name of person(s) in the offeror's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the offeror's organization);

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision.

(c) If the offeror deletes or modifies subparagraph (a)(2) of this provision, the offeror must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure.

(End of provision)

52.203-11 CERTIFICATION AND DISCLOSURE REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (APR 1991)

(a) The definitions and prohibitions contained in the clause, at FAR 52.203-12, Limitation on Payments to Influence Certain Federal Transactions, included in this solicitation, are hereby incorporated by reference in paragraph (b) of this Certification.

(b) The offeror, by signing its offer, hereby certifies to the best of his or her knowledge and belief that on or after December 23, 1989,--

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan, or cooperative agreement;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the offeror shall complete and submit, with its offer, OMB standard form LLL, Disclosure of Lobbying Activities, to the Contracting Officer; and

(3) He or she will include the language of this certification in all subcontract awards at any tier and require that all recipients of subcontract awards in excess of \$100,000 shall certify and disclose accordingly.

Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision, shall be subject to a civil penalty of not less than \$10,000, and not more than \$100,000, for each such failure.

(End of provision)

52.204-3 TAXPAYER IDENTIFICATION (OCT 1998)

(a) Definitions.

“Common parent,” as used in this provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member.

“Taxpayer Identification Number (TIN),” as used in this provision, means the number required by the Internal Revenue Service (IRS) to be used by the offeror in reporting income tax and other returns. The TIN may be either a Social Security Number or an Employer Identification Number.

(b) All offerors must submit the information required in paragraphs (d) through (f) of this provision to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325(d), reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M, and implementing regulations issued by the IRS. If the resulting contract is subject to the payment reporting requirements described in Federal Acquisition Regulation (FAR) 4.904, the failure or refusal by the offeror to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(c) The TIN may be used by the Government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (31 U.S.C. 7701(c)(3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.

(d) Taxpayer Identification Number (TIN).

___ TIN: _____

___ TIN has been applied for.

___ TIN is not required because:

___ Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the United States and does not have an office or place of business or a fiscal paying agent in the United States;

___ Offeror is an agency or instrumentality of a foreign government;

___ Offeror is an agency or instrumentality of the Federal Government.

(e) Type of organization.

___ Sole proprietorship;

___ Partnership;

___ Corporate entity (not tax-exempt);

___ Corporate entity (tax-exempt);

___ Government entity (Federal, State, or local);

___ Foreign government;

___ International organization per 26 CFR 1.6049-4;

___ Other _____

(f) Common parent.

___ Offeror is not owned or controlled by a common parent as defined in paragraph (a) of this provision.

____ Name and TIN of common parent:

Name _____

TIN _____

(End of provision)

52.204-5 WOMEN-OWNED BUSINESS (OTHER THAN SMALL BUSINESS) (MAY 1999)

(a) Definition. Women-owned business concern, as used in this provision, means a concern that is at least 51 percent owned by one or more women; or in the case of any publicly owned business, at least 51 percent of its stock is owned by one or more women; and whose management and daily business operations are controlled by one or more women.

(b) Representation. [Complete only if the offeror is a women-owned business concern and has not represented itself as a small business concern in paragraph (b)(1) of FAR 52.219-1, Small Business Program Representations, of this solicitation.] The offeror represents that it () is a women-owned business concern.

(End of provision)

52.209-5 CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS (DEC 2001)

(a)(1) The Offeror certifies, to the best of its knowledge and belief, that--

(i) The Offeror and/or any of its Principals --

(A) Are () are not () presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have () have not (), within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are () are not () presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in subdivision (a)(1)(i)(B) of this provision.

(ii) The Offeror has () has not (), within a three-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

THIS CERTIFICATION CONCERNS A MATTER WITHIN THE JURISDICTION OF AN AGENCY OF THE UNITED STATES AND THE MAKING OF A FALSE, FICTITIOUS, OR FRAUDULENT CERTIFICATION MAY RENDER THE MAKER SUBJECT TO PROSECUTION UNDER SECTION 1001, TITLE 18, UNITED STATES CODE.

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

(End of provision)

52.219-1 SMALL BUSINESS PROGRAM REPRESENTATIONS (APR 2002) - ALTERNATE I (APR 2002)

(a)(1) The North American Industry Classification System (NAICS) code for this acquisition is 237990.

(2) The small business size standard is \$28,500,000.

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b) Representations. (1) The offeror represents as part of its offer that it () is, () is not a small business concern.

(2) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents, for general statistical purposes, that it () is, () is not a small disadvantaged business concern as defined in 13 CFR 124.1002.

(3) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it () is, () is not a women-owned small business concern.

(4) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it () is, () is not a veteran-owned small business concern.

(5) (Complete only if the offeror represented itself as a veteran-owned small business concern in paragraph (b)(4) of this provision.) The offeror represents as part of its offer that it () is, () is not a service-disabled veteran-owned small business concern.

(6) [Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.] The offeror represents, as part of its offer, that--

(i) It () is, () is not a HUBZone small business concern listed, on the date of this representation, on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration, and no material change in ownership and control, principal office, or HUBZone employee percentage has occurred since it was certified by the Small Business Administration in accordance with 13 CFR part 126; and

(ii) It () is, () is not a joint venture that complies with the requirements of 13 CFR part 126, and the representation in paragraph (b)(6)(i) of this provision is accurate for the HUBZone small business concern or concerns that are participating in the joint venture. (The offeror shall enter the name or names of the HUBZone small business concern or concerns that are participating in the joint venture:_____.) Each HUBZone small business concern participating in the joint venture shall submit a separate signed copy of the HUBZone representation.

(7) (Complete if offeror represented itself as disadvantaged in paragraph (b)(2) of this provision.) The offeror shall check the category in which its ownership falls:

____ Black American.

____ Hispanic American.

____ Native American (American Indians, Eskimos, Aleuts, or Native Hawaiians).

____ Asian-Pacific American (persons with origins from Burma, Thailand, Malaysia, Indonesia, Singapore, Brunei, Japan, China, Taiwan, Laos, Cambodia (Kampuchea), Vietnam, Korea, The Philippines, U.S. Trust Territory of the Pacific Islands (Republic of Palau), Republic of the Marshall Islands, Federated States of Micronesia, the Commonwealth of the Northern Mariana Islands, Guam, Samoa, Macao, Hong Kong, Fiji, Tonga, Kiribati, Tuvalu, or Nauru).

____ Subcontinent Asian (Asian-Indian) American (persons with origins from India, Pakistan, Bangladesh, Sri Lanka, Bhutan, the Maldives Islands, or Nepal).

____ Individual/concern, other than one of the preceding.

(c) Definitions. As used in this provision--

Service-disabled veteran-owned small business concern--

(1) Means a small business concern--

(i) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

(ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.

(2) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16).

"Small business concern," means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR Part 121 and the size standard in paragraph (a) of this provision.

Veteran-owned small business concern means a small business concern--

(1) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and

(2) The management and daily business operations of which are controlled by one or more veterans.

"Women-owned small business concern," means a small business concern --

(1) That is at least 51 percent owned by one or more women or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; or

(2) Whose management and daily business operations are controlled by one or more women.

(d) Notice.

(1) If this solicitation is for supplies and has been set aside, in whole or in part, for small business concerns, then the clause in this solicitation providing notice of the set-aside contains restrictions on the source of the end items to be furnished.

(2) Under 15 U.S.C. 645(d), any person who misrepresents a firm's status as a small, HUBZone small, small disadvantaged, or women-owned small business concern in order to obtain a contract to be awarded under the preference programs established pursuant to section 8(a), 8(d), 9, or 15 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, shall--

(i) Be punished by imposition of fine, imprisonment, or both;

(ii) Be subject to administrative remedies, including suspension and debarment; and

(iii) Be ineligible for participation in programs conducted under the authority of the Act.

(End of provision)

52.219-2 *EQUAL LOW BIDS. (OCT 1995)*

(a) This provision applies to small business concerns only.

(b) The bidder's status as a labor surplus area (LSA) concern may affect entitlement to award in case of tie bids. If the bidder wishes to be considered for this priority, the bidder must identify, in the following space, the LSA in which the costs to be incurred on account of manufacturing or production (by the bidder or the first-tier subcontractors) amount to more than 50 percent of the contract price.

(c) Failure to identify the labor surplus area as specified in paragraph (b) of this provision will preclude the bidder from receiving priority consideration. If the bidder is awarded a contract as a result of receiving priority consideration under this provision and would not have otherwise received award, the bidder shall perform the contract or cause the contract to be performed in accordance with the obligations of an LSA concern.

52.219-19 *SMALL BUSINESS CONCERN REPRESENTATION FOR THE SMALL BUSINESS COMPETITIVENESS DEMONSTRATION PROGRAM (OCT 2000)*

(a) Definition.

"Emerging small business" as used in this solicitation, means a small business concern whose size is no greater than 50 percent of the numerical size standard applicable to the North American Industry Classification System (NAICS) code assigned to a contracting opportunity.

(b) [Complete only if the Offeror has represented itself under the provision at 52.219-1 as a small business concern under the size standards of this solicitation.] The Offeror [] is, [] is not an emerging small business.

(c) (Complete only if the Offeror is a small business or an emerging small business, indicating its size range.)

Offeror's number of employees for the past 12 months (check this column if size standard stated in solicitation is expressed in terms of number of employees) or Offeror's average annual gross revenue for the last 3 fiscal years (check this column if size standard stated in solicitation is expressed in terms of annual receipts). (Check one of the following.)

No. of Employees Avg. Annual Gross Revenues

____ 50 or fewer ____ \$1 million or less

____ 51 - 100 ____ \$1,000,001 - \$2 million

____ 101 - 250 ____ \$2,000,001 - \$3.5 million
____ 251 - 500 ____ \$3,500,001 - \$5 million
____ 501 - 750 ____ \$5,000,001 - \$10 million
____ 751 - 1,000 ____ \$10,000,001 - \$17 million
____ Over 1,000 ____ Over \$17 million

(End of provision)

52.222-22 *PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (FEB 1999)*

The offeror represents that --

- (a) (☐) It has, (☐) has not participated in a previous contract or subcontract subject to the Equal Opportunity clause of this solicitation;
- (b) (☐) It has, (☐) has not, filed all required compliance reports; and
- (c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards.

(End of provision)

52.222-38 *COMPLIANCE WITH VETERANS' EMPLOYMENT REPORTING REQUIREMENTS (DEC 2001)*

By submission of its offer, the offeror represents that, if it is subject to the reporting requirements of 38 U.S.C. 4212(d) (i.e., if it has any contract containing Federal Acquisition Regulation clause 52.222-37, Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans), it has submitted the most recent VETS-100 Report required by that clause.

(End of provision)

52.223-13 CERTIFICATION OF TOXIC CHEMICAL RELEASE REPORTING (OCT 2000)

(a) Submission of this certification is a prerequisite for making or entering into this contract imposed by Executive Order 12969, August 8, 1995.

(b) By signing this offer, the offeror certifies that--

(1) As the owner or operator of facilities that will be used in the performance of this contract that are subject to the filing and reporting requirements described in section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11023) and section 6607 of the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13106), the offeror will file and continue to file for such facilities for the life of the contract the Toxic Chemical Release Inventory Form (Form R) as described in sections 313(a) and (g) of EPCRA and section 6607 of PPA; or

(2) None of its owned or operated facilities to be used in the performance of this contract is subject to the Form R filing and reporting requirements because each such facility is exempt for at least one of the following reasons: (Check each block that is applicable.)

() (i) The facility does not manufacture, process or otherwise use any toxic chemicals listed under section 313(c) of EPCRA, 42 U.S.C. 11023(c);

() (ii) The facility does not have 10 or more full-time employees as specified in section 313.(b)(1)(A) of EPCRA 42 U.S.C. 11023(b)(1)(A);

() (iii) The facility does not meet the reporting thresholds of toxic chemicals established under section 313(f) of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);

() (iv) The facility does not fall within Standard Industrial Classification Code (SIC) major groups 20 through 39 or their corresponding North American Industry Classification System (NAICS) sectors 31 through 33; or

() (v) The facility is not located within any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Northern Mariana Islands, or any other territory or possession over which the United States has jurisdiction.

(End of clause)

252.209-7001 DISCLOSURE OF OWNERSHIP OR CONTROL BY THE GOVERNMENT OF A TERRORIST COUNTRY (MAR 1998)

(a) "Definitions."

As used in this provision --

(a) "Government of a terrorist country" includes the state and the government of a terrorist country, as well as any political subdivision, agency, or instrumentality thereof.

(2) "Terrorist country" means a country determined by the Secretary of State, under section 6(j)(1)(A) of the Export Administration Act of 1979 (50 U.S.C. App. 2405(j)(i)(A)), to be a country the government of which has repeatedly provided support for such acts of international terrorism. As of the date of this provision, terrorist countries include: Cuba, Iran, Iraq, Libya, North Korea, Sudan, and Syria.

(3) "Significant interest" means --

(i) Ownership of or beneficial interest in 5 percent or more of the firm's or subsidiary's securities. Beneficial interest includes holding 5 percent or more of any class of the firm's securities in "nominee shares," "street names," or some other method of holding securities that does not disclose the beneficial owner;

(ii) Holding a management position in the firm, such as a director or officer;

(iii) Ability to control or influence the election, appointment, or tenure of directors or officers in the firm;

(iv) Ownership of 10 percent or more of the assets of a firm such as equipment, buildings, real estate, or other tangible assets of the firm; or

(v) Holding 50 percent or more of the indebtedness of a firm.

(b) "Prohibition on award."

In accordance with 10 U.S.C. 2327, no contract may be awarded to a firm or a subsidiary of a firm if the government of a terrorist country has a significant interest in the firm or subsidiary or, in the case of a subsidiary, the firm that owns the subsidiary, unless a waiver is granted by the Secretary of Defense.

(c) "Disclosure."

If the government of a terrorist country has a significant interest in the Offeror or a subsidiary of the Offeror, the Offeror shall disclose such interest in an attachment to its offer. If the Offeror is a subsidiary, it shall also disclose any significant interest the government of a terrorist country has in any firm that owns or controls the subsidiary. The disclosure shall include --

(1) Identification of each government holding a significant interest; and

(2) A description of the significant interest held by each government.

(End of provision)

252.225-7003 INFORMATION FOR DUTY-FREE ENTRY EVALUATION (MAR 1998)

(c) Does the offeror propose to furnish—

(1) A domestic end product with nonqualifying country components for which the offeror requests duty-free entry;
or

(2) A foreign end product consisting of end items, components, or material of foreign origin other than those for which duty-free entry is to be accorded pursuant to the Duty-Free Entry--Qualifying Country Supplies (End Products and Components) clause or, if applicable, the Duty-Free Entry--Eligible End Products clause of this solicitation?

Yes () No ()

(ii) If the answer in paragraph (a) is yes, answer the following questions:

(1) Are such foreign supplies now in the United States?

Yes () No ()

(2) Has the duty on such foreign supplies been paid?

Yes () No ()

(3) If the answer to paragraph (b)(2) is no, what amount is included in the offer to cover such duty? \$_____

(c) If the duty has not been paid, the Government may elect to make award on a duty-free basis. If so, the offered price will be reduced in the contract award by the amount specified in paragraph (b)(3). The Offeror agrees to identify, at the request of the Contracting Officer, the foreign supplies which are subject to duty-free entry.

(End of clause)

252.225-7017 PROHIBITION ON AWARD TO COMPANIES OWNED BY THE PEOPLE'S REPUBLIC OF CHINA (FEB 2000)

(a) Definition. "People's Republic of China," as used in this provision, means the government of the People's Republic of China, including its political subdivisions, agencies, and instrumentalities.

(b) Prohibition on award. Section 8120 of the Department of Defense Appropriations Act for fiscal year 1999 (Pub. L. 105-262), as amended by Section 144 of Title I, Division C, of the Omnibus Consolidated and Emergency Supplemental Appropriations Act, 1999 (Pub. L. 105-277), prohibits the award of a contract under this solicitation to any company in which the Director of Defense Procurement (Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics)) has determined that the People's Republic of China or the People's Liberation Army of the People's Republic of China owns more than 50 percent interest.

(c) Representation. By submission of an offer, the offeror represents that the People's Republic of China or the People's Liberation Army of the People's Republic of China does not own more than 50 percent interest in the offeror.

(End of provision)

**252.247-7022 REPRESENTATION OF EXTENT OF
TRANSPORTATION BY SEA (AUG 1992)**

(a) The Offeror shall indicate by checking the appropriate blank in paragraph (b) of this provision whether transportation of supplies by sea is anticipated under the resultant contract. The term supplies is defined in the Transportation of Supplies by Sea clause of this solicitation.

(b) Representation. The Offeror represents that it:

____ (1) Does anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

____ (2) Does not anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

(c) Any contract resulting from this solicitation will include the Transportation of Supplies by Sea clause. If the Offeror represents that it will not use ocean transportation, the resulting contract will also include the Defense FAR Supplement clause at 252.247-7024, Notification of Transportation of Supplies by Sea.

(End of provision)

SECTION 00700 - Contract Clauses

CLAUSES INCORPORATED BY FULL TEXT

52.202-1 DEFINITIONS (DEC 2001) --ALTERNATE I (MAY 2001)

(a) Agency head or head of the agency means the Secretary (Attorney General, Administrator, Governor, Chairperson, or other chief official, as appropriate) of the agency, unless otherwise indicated, including any deputy or assistant chief official of the executive agency.

(b) "Commercial component" means any component that is a commercial item.

(c) Any item, other than real property, that is of a type customarily used by the general public or by non-governmental entities for purposes other than governmental purposes, and that--

(i) Has been sold, leased, or licensed to the general public; or

(ii) Has been offered for sale, lease, or license to the general public;

(2) Any item that evolved from an item described in paragraph (c)(1) of this clause through advances in technology or performance and that is not yet available in the commercial marketplace, but will be available in the commercial marketplace in time to satisfy the delivery requirements under a Government solicitation;

(3) Any item that would satisfy a criterion expressed in paragraphs (c)(1) or (c)(2) of this clause, but for--

(i) Modifications of a type customarily available in the commercial marketplace; or

(ii) Minor modifications of a type not customarily available in the commercial marketplace made to meet Federal Government requirements. "Minor" modifications means modifications that do not significantly alter the nongovernmental function or essential physical characteristics of an item or component, or change the purpose of a process. Factors to be considered in determining whether a modification is minor include the value and size of the modification and the comparative value and size of the final product. Dollar values and percentages may be used as guideposts, but are not conclusive evidence that a modification is minor;

(4) Any combination of items meeting the requirements of paragraphs (c)(1), (2), (3), or (5) of this clause that are of a type customarily combined and sold in combination to the general public;

(5) Installation services, maintenance services, repair services, training services, and other services if--

(i) Such services are procured for support of an item referred to in paragraph (c)(1), (2), (3), or (4) of this definition, regardless of whether such services are provided by the same source or at the same time as the item; and

(ii) The source of such services provides similar services contemporaneously to the general public under terms and conditions similar to those offered to the Federal Government;

(6) Services of a type offered and sold competitively in substantial quantities in the commercial marketplace based on established catalog or market prices for specific tasks performed under standard commercial terms and conditions.

This does not include services that are sold based on hourly rates without an established catalog or market price for a specific service performed. For purposes of these services--

(i) Catalog price means a price included in a catalog, price list, schedule, or other form that is regularly maintained by the manufacturer or vendor, is either published or otherwise available for inspection by customers, and states prices at which sales are currently, or were last, made to a significant number of buyers constituting the general public; and

(ii) Market prices means current prices that are established in the course of ordinary trade between buyers and sellers free to bargain and that can be substantiated through competition or from sources independent of the offerors.

(7) Any item, combination of items, or service referred to in subparagraphs (c)(1) through (c)(6), notwithstanding the fact that the item, combination of items, or service is transferred between or among separate divisions, subsidiaries, or affiliates of a Contractor; or

(8) A nondevelopmental item, if the procuring agency determines the item was developed exclusively at private expense and sold in substantial quantities, on a competitive basis, to multiple State and local Governments.

(d) Component means any item supplied to the Government as part of an end item or of another component, except that for use in 52.225-9, and 52.225-11 see the definitions in 52.225-9(a) and 52.225-11(a).

(e) Contracting Officer means a person with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings. The term includes certain authorized representatives of the Contracting Officer acting within the limits of their authority as delegated by the Contracting Officer.

(f) Nondevelopmental item means--

(1) Any previously developed item of supply used exclusively for governmental purposes by a Federal agency, a State or local government, or a foreign government with which the United States has a mutual defense cooperation agreement;

(2) Any item described in paragraph (f)(1) of this definition that requires only minor modification or modifications of a type customarily available in the commercial marketplace in order to meet the requirements of the procuring department or agency; or

(3) Any item of supply being produced that does not meet the requirements of paragraph (f)(1) or (f)(2) solely because the item is not yet in use.

(End of clause)

52.202-4001 DEFINITIONS (MAY 1995) EFARS Part 2.101

"Chief of Contracting Office" means the Chief of the Contracting Division at a District, or the Director of Contracting at a Division, Center, Laboratory, or other support activity.

"Command" means each USACE Division, each USACE District, The U.S. Army Engineering and Support Center (HNC), Transatlantic Programs Center (TAC), Transatlantic Programs Center (Europe) (TAE), Topographic Engineer Center

(TEC), Cold Regions Research and Engineering Laboratory (CRREL), Construction Engineering Research Laboratory (CERL), Humphreys Engineering Center Support Activity (HECSA), and Waterways experiment Station (WES).

"Commander" means the commanding officer of each USACE district and each USACE division, and the director or commander of HNC, TAC, TAE, ETL, CRREL, CERL, HECSA and WES.

"Head of Contracting Activity (HCA)" for USACE means the Chief of Engineers.

Centers. For determining contracting authority levels for this regulation, Centers (HNC, and TAC) will equate to a Division. As a subordinate unit to TAC, TAE's contracting authority will therefore equate to that of a district.

Level higher than the contracting officer. When a District or TAE chief of contracting is the contracting officer, a "level higher than the contracting officer" means the Division or Center Director of Contracting. When an operating Division, Center or Laboratory Director/Chief of Contracting is the contracting officer a "level higher than the contracting officer" means the PARC.

Local Cooperation Agreements (LCAs). See Project Cooperation Agreements.

Project Cooperation Agreements. Formerly referred to as Local Cooperation Agreements, these are agreements under 31 U.S.C. 6305 and 42 U.S.C. 1962d-5b. They are not contracts as defined by the FAR.

"USACE and HQUSACE" means the United States Army Corps of Engineers and its headquarters, respectively.

52.203-3 GRATUITIES (APR 1984)

(a) The right of the Contractor to proceed may be terminated by written notice if, after notice and hearing, the agency head or a designee determines that the Contractor, its agent, or another representative--

(1) Offered or gave a gratuity (e.g., an entertainment or gift) to an officer, official, or employee of the Government; and

(2) Intended, by the gratuity, to obtain a contract or favorable treatment under a contract.

(b) The facts supporting this determination may be reviewed by any court having lawful jurisdiction.

(c) If this contract is terminated under paragraph (a) of this clause, the Government is entitled--

(1) To pursue the same remedies as in a breach of the contract; and

(2) In addition to any other damages provided by law, to exemplary damages of not less than 3 nor more than 10 times the cost incurred by the Contractor in giving gratuities to the person concerned, as determined by the agency head or a designee. (This subparagraph (c)(2) is applicable only if this contract uses money appropriated to the Department of Defense.)

(d) The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

(End of clause)

52.203-5 COVENANT AGAINST CONTINGENT FEES (APR 1984)

(a) The Contractor warrants that no person or agency has been employed or retained to solicit or obtain this contract upon an agreement or understanding for a contingent fee, except a bona fide employee or agency. For breach or violation of this warranty, the Government shall have the right to annul this contract without liability or, in its discretion, to deduct from the contract price or consideration, or otherwise recover, the full amount of the contingent fee.

(b) "Bona fide agency," as used in this clause, means an established commercial or selling agency, maintained by a contractor for the purpose of securing business, that neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds itself out as being able to obtain any Government contract or contracts through improper influence.

"Bona fide employee," as used in this clause, means a person, employed by a contractor and subject to the contractor's supervision and control as to time, place, and manner of performance, who neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds out as being able to obtain any Government contract or contracts through improper influence.

"Contingent fee," as used in this clause, means any commission, percentage, brokerage, or other fee that is contingent upon the success that a person or concern has in securing a Government contract.

"Improper influence," as used in this clause, means any influence that induces or tends to induce a Government employee or officer to give consideration or to act regarding a Government contract on any basis other than the merits of the matter.

(End of clause)

52.203-7 ANTI-KICKBACK PROCEDURES. (JUL 1995)

(a) Definitions.

"Kickback," as used in this clause, means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided, directly or indirectly, to any prime Contractor, prime Contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a subcontract relating to a prime contract.

"Person," as used in this clause, means a corporation, partnership, business association of any kind, trust, joint-stock company, or individual.

"Prime contract," as used in this clause, means a contract or contractual action entered into by the United States for the purpose of obtaining supplies, materials, equipment, or services of any kind.

"Prime Contractor," as used in this clause, means a person who has entered into a prime contract with the United States.

"Prime Contractor employee," as used in this clause, means any officer, partner, employee, or agent of a prime Contractor.

"Subcontract," as used in this clause, means a contract or contractual action entered into by a prime Contractor or subcontractor for the purpose of obtaining supplies, materials, equipment, or services of any kind under a prime contract.

"Subcontractor," as used in this clause, (1) means any person, other than the prime Contractor, who offers to furnish or furnishes any supplies, materials, equipment, or services of any kind under a prime contract or a subcontract entered into in connection with such prime contract, and (2) includes any person who offers to furnish or furnishes general supplies to the prime Contractor or a higher tier subcontractor.

"Subcontractor employee," as used in this clause, means any officer, partner, employee, or agent of a subcontractor.

(b) The Anti-Kickback Act of 1986 (41 U.S.C. 51-58) (the Act), prohibits any person from -

(1) Providing or attempting to provide or offering to provide any kickback;

(2) Soliciting, accepting, or attempting to accept any kickback; or

(3) Including, directly or indirectly, the amount of any kickback in the contract price charged by a prime Contractor to the United States or in the contract price charged by a subcontractor to a prime Contractor or higher tier subcontractor.

(c)(1) The Contractor shall have in place and follow reasonable procedures designed to prevent and detect possible violations described in paragraph (b) of this clause in its own operations and direct business relationships.

(2) When the Contractor has reasonable grounds to believe that a violation described in paragraph (b) of this clause may have occurred, the Contractor shall promptly report in writing the possible violation. Such reports shall be made to the inspector general of the contracting agency, the head of the contracting agency if the agency does not have an inspector general, or the Department of Justice.

(3) The Contractor shall cooperate fully with any Federal agency investigating a possible violation described in paragraph (b) of this clause.

(4) The Contracting Officer may (i) offset the amount of the kickback against any monies owed by the United States under the prime contract and/or (ii) direct that the Prime Contractor withhold, from sums owed a subcontractor under the prime contract, the amount of any kickback. The Contracting Officer may order the monies withheld under subdivision (c)(4)(ii) of this clause be paid over to the Government unless the Government has already offset those monies under subdivision (c)(4)(i) of this clause. In either case, the Prime Contractor shall notify the Contracting Officer when the monies are withheld.

(5) The Contractor agrees to incorporate the substance of this clause, including this subparagraph (c)(5) but excepting subparagraph (c)(1), in all subcontracts under this contract which exceed \$100,000.

52.203-8 CANCELLATION, RESCISSION, AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY (JAN 1997)

(a) If the Government receives information that a contractor or a person has engaged in conduct constituting a violation of subsection (a), (b), (c), or (d) of Section 27 of the Office of Federal Procurement Policy Act (41 U.S.C. 423) (the Act), as amended by section 4304 of the 1996 National Defense Authorization Act for Fiscal Year 1996 (Pub. L. 104-106), the Government may--

(1) Cancel the solicitation, if the contract has not yet been awarded or issued; or

(2) Rescind the contract with respect to which--

(i) The Contractor or someone acting for the Contractor has been convicted for an offense where the conduct constitutes a violation of subsection 27(a) or (b) of the Act for the purpose of either--

(A) Exchanging the information covered by such subsections for anything of value; or

(B) Obtaining or giving anyone a competitive advantage in the award of a Federal agency procurement contract; or

(ii) The head of the contracting activity has determined, based upon a preponderance of the evidence, that the Contractor or someone acting for the Contractor has engaged in conduct constituting an offense punishable under subsections 27(e)(1) of the Act.

(b) If the Government rescinds the contract under paragraph (a) of this clause, the Government is entitled to recover, in addition to any penalty prescribed by law, the amount expended under the contract.

(c) The rights and remedies of the Government specified herein are not exclusive, and are in addition to any other rights and remedies provided by law, regulation, or under this contract.

(End of clause)

52.203-10 PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY (JAN 1997)

(a) The Government, at its election, may reduce the price of a fixed-price type contract and the total cost and fee under a cost-type contract by the amount of profit or fee determined as set forth in paragraph (b) of this clause if the head of the contracting activity or designee determines that there was a violation of subsection 27 (a), (b), or (c) of the Office of Federal Procurement Policy Act, as amended (41 U.S.C. 423), as implemented in section 3.104 of the Federal Acquisition Regulation.

(b) The price or fee reduction referred to in paragraph (a) of this clause shall be--

- (1) For cost-plus-fixed-fee contracts, the amount of the fee specified in the contract at the time of award;
- (2) For cost-plus-incentive-fee contracts, the target fee specified in the contract at the time of award, notwithstanding any minimum fee or "fee floor" specified in the contract;
- (3) For cost-plus-award-fee contracts--
 - (i) The base fee established in the contract at the time of contract award;
 - (ii) If no base fee is specified in the contract, 30 percent of the amount of each award fee otherwise payable to the Contractor for each award fee evaluation period or at each award fee determination point.
- (4) For fixed-price-incentive contracts, the Government may--
 - (i) Reduce the contract target price and contract target profit both by an amount equal to the initial target profit specified in the contract at the time of contract award; or
 - (ii) If an immediate adjustment to the contract target price and contract target profit would have a significant adverse impact on the incentive price revision relationship under the contract, or adversely affect the contract financing provisions, the Contracting Officer may defer such adjustment until establishment of the total final price of the contract. The total final price established in accordance with the incentive price revision provisions of the contract shall be reduced by an amount equal to the initial target profit specified in the contract at the time of contract award and such reduced price shall be the total final contract price.
- (5) For firm-fixed-price contracts, by 10 percent of the initial contract price or a profit amount determined by the Contracting Officer from records or documents in existence prior to the date of the contract award.
- (c) The Government may, at its election, reduce a prime contractor's price or fee in accordance with the procedures of paragraph (b) of this clause for violations of the Act by its subcontractors by an amount not to exceed the amount of profit or fee reflected in the subcontract at the time the subcontract was first definitively priced.
- (d) In addition to the remedies in paragraphs (a) and (c) of this clause, the Government may terminate this contract for default. The rights and remedies of the Government specified herein are not exclusive, and are in addition to any other rights and remedies provided by law or under this contract.

(End of clause)

52.203-12 *LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (JUN 1997)*

(a) Definitions.

"Agency," as used in this clause, means executive agency as defined in 2.101.

"Covered Federal action," as used in this clause, means any of the following Federal actions:

- (1) The awarding of any Federal contract.

- (2) The making of any Federal grant.
- (3) The making of any Federal loan.
- (4) The entering into of any cooperative agreement.
- (5) The extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

"Indian tribe" and "tribal organization," as used in this clause, have the meaning provided in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) and include Alaskan Natives.

"Influencing or attempting to influence," as used in this clause, means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

"Local government," as used in this clause, means a unit of government in a State and, if chartered, established, or otherwise recognized by a State for the performance of a governmental duty, including a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

"Officer or employee of an agency," as used in this clause, includes the following individuals who are employed by an agency:

- (1) An individual who is appointed to a position in the Government under Title 5, United States Code, including a position under a temporary appointment.
- (2) A member of the uniformed services, as defined in subsection 101(3), Title 37, United States Code.
- (3) A special Government employee, as defined in section 202, Title 18, United States Code.
- (4) An individual who is a member of a Federal advisory committee, as defined by the Federal Advisory Committee Act, Title 5, United States Code, appendix 2.

"Person," as used in this clause, means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit, or not for profit. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Reasonable compensation," as used in this clause, means, with respect to a regularly employed officer or employee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

"Reasonable payment," as used in this clause, means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

"Recipient," as used in this clause, includes the Contractor and all subcontractors. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Regularly employed," as used in this clause, means, with respect to an officer or employee of a person requesting or receiving a Federal contract, an officer or employee who is employed by such person for at least 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person for

receipt of such contract. An officer or employee who is employed by such person for less than 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

"State," as used in this clause, means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, an agency or instrumentality of a State, and multi-State, regional, or interstate entity having governmental duties and powers.

(b) Prohibitions.

(1) Section 1352 of Title 31, United States Code, among other things, prohibits a recipient of a Federal contract, grant, loan, or cooperative agreement from using appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.

(2) The Act also requires Contractors to furnish a disclosure if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan, or cooperative agreement.

(3) The prohibitions of the Act do not apply under the following conditions:

(i) Agency and legislative liaison by own employees.

(A) The prohibition on the use of appropriated funds, in subparagraph (b)(1) of this clause, does not apply in the case of a payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action if the payment is for agency and legislative liaison activities not directly related to a covered Federal action.

(B) For purposes of subdivision (b)(3)(i)(A) of this clause, providing any information specifically requested by an agency or Congress is permitted at any time.

(C) The following agency and legislative liaison activities are permitted at any time where they are not related to a specific solicitation for any covered Federal action:

(1) Discussing with an agency the qualities and characteristics (including individual demonstrations) of the person's products or services, conditions or terms of sale, and service capabilities.

(2) Technical discussions and other activities regarding the application or adaptation of the person's products or services for an agency's use.

(D) The following agency and legislative liaison activities are permitted where they are prior to formal solicitation of any covered Federal action--

(1) Providing any information not specifically requested but necessary for an agency to make an informed decision about initiation of a covered Federal action;

(2) Technical discussions regarding the preparation of an unsolicited proposal prior to its official submission; and

(3) Capability presentations by persons seeking awards from an agency pursuant to the provisions of the Small Business Act, as amended by Pub. L. 95-507, and subsequent amendments.

(E) Only those services expressly authorized by subdivision (b)(3)(i)(A) of this clause are permitted under this clause.

(ii) Professional and technical services.

(A) The prohibition on the use of appropriated funds, in subparagraph (b)(1) of this clause, does not apply in the case of--

(1) A payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action, if payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action.

(2) Any reasonable payment to a person, other than an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action if the payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action. Persons other than officers or employees of a person requesting or receiving a covered Federal action include consultants and trade associations.

(B) For purposes of subdivision (b)(3)(ii)(A) of this clause, "professional and technical services" shall be limited to advice and analysis directly applying any professional or technical discipline. For example, drafting of a legal document accompanying a bid or proposal by a lawyer is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(C) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation and any other requirements in the actual award documents.

(D) Only those services expressly authorized by subdivisions (b)(3)(ii)(A)(1) and (2) of this clause are permitted under this clause.

(E) The reporting requirements of FAR 3.803(a) shall not apply with respect to payments of reasonable compensation made to regularly employed officers or employees of a person.

(c) Disclosure.

(1) The Contractor who requests or receives from an agency a Federal contract shall file with that agency a disclosure form, OMB standard form LLL, Disclosure of Lobbying Activities, if such person has made or has agreed to make any

payment using nonappropriated funds (to include profits from any covered Federal action), which would be prohibited under subparagraph (b)(1) of this clause, if paid for with appropriated funds.

(2) The Contractor shall file a disclosure form at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under subparagraph (c)(1) of this clause. An event that materially affects the accuracy of the information reported includes--

(i) A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

(ii) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or

(iii) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(3) The Contractor shall require the submittal of a certification, and if required, a disclosure form by any person who requests or receives any subcontract exceeding \$100,000 under the Federal contract.

(4) All subcontractor disclosure forms (but not certifications) shall be forwarded from tier to tier until received by the prime Contractor. The prime Contractor shall submit all disclosures to the Contracting Officer at the end of the calendar quarter in which the disclosure form is submitted by the subcontractor. Each subcontractor certification shall be retained in the subcontract file of the awarding Contractor.

(d) Agreement. The Contractor agrees not to make any payment prohibited by this clause.

(e) Penalties.

(1) Any person who makes an expenditure prohibited under paragraph (a) of this clause or who fails to file or amend the disclosure form to be filed or amended by paragraph (b) of this clause shall be subject to civil penalties as provided for by 31 U.S.C. 1352. An imposition of a civil penalty does not prevent the Government from seeking any other remedy that may be applicable.

(2) Contractors may rely without liability on the representation made by their subcontractors in the certification and disclosure form.

(f) Cost allowability. Nothing in this clause makes allowable or reasonable any costs which would otherwise be unallowable or unreasonable. Conversely, costs made specifically unallowable by the requirements in this clause will not be made allowable under any other provision.

(End of clause)

52.204-4 PRINTED OR COPIED DOUBLE-SIDED ON RECYCLED PAPER (AUG 2000)

(a) Definitions. As used in this clause--

“Postconsumer material” means a material or finished product that has served its intended use and has been discarded for disposal or recovery, having completed its life as a consumer item. Postconsumer material is a part of the broader category of “recovered material.” For paper and paper products, postconsumer material means “postconsumer fiber” defined by the U.S. Environmental Protection Agency (EPA) as--

- (1) Paper, paperboard, and fibrous materials from retail stores, office buildings, homes, and so forth, after they have passed through their end-usage as a consumer item, including: used corrugated boxes; old newspapers; old magazines; mixed waste paper; tabulating cards; and used cordage; or
- (2) All paper, paperboard, and fibrous materials that enter and are collected from municipal solid waste; but not
- (3) Fiber derived from printers' over-runs, converters' scrap, and over-issue publications.

“Printed or copied double-sided” means printing or reproducing a document so that information is on both sides of a sheet of paper.

“Recovered material,” for paper and paper products, is defined by EPA in its Comprehensive Procurement Guideline as “recovered fiber” and means the following materials:

- (1) Postconsumer fiber; and
- (2) Manufacturing wastes such as--
 - (i) Dry paper and paperboard waste generated after completion of the papermaking process (that is, those manufacturing operations up to and including the cutting and trimming of the paper machine reel into smaller rolls or rough sheets) including: envelope cuttings, bindery trimmings, and other paper and paperboard waste resulting from printing, cutting, forming, and other converting operations; bag, box, and carton manufacturing wastes; and butt rolls, mill wrappers, and rejected unused stock; and
 - (ii) Repulped finished paper and paperboard from obsolete inventories of paper and paperboard manufacturers, merchants, wholesalers, dealers, printers, converters, or others.
- (b) In accordance with Section 101 of Executive Order 13101 of September 14, 1998, Greening the Government through Waste Prevention, Recycling, and Federal Acquisition, the Contractor is encouraged to submit paper documents, such as offers, letters, or reports, that are printed or copied double-sided on recycled paper that meet minimum content standards specified in Section 505 of Executive Order 13101, when not using electronic commerce methods to submit information or data to the Government.
- (c) If the Contractor cannot purchase high-speed copier paper, offset paper, forms bond, computer printout paper, carbonless paper, file folders, white wove envelopes, writing and office paper, book paper, cotton fiber paper, and cover stock meeting the 30 percent postconsumer material standard for use in submitting paper documents to the Government, it should use paper containing no less than 20 percent postconsumer material. This lesser standard should be used only when paper meeting the 30 percent postconsumer material standard is not obtainable at a reasonable price or does not meet reasonable performance standards.

(End of clause)

52.209-6 PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT (JUL 1995)

(a) The Government suspends or debar Contractors to protect the Government's interests. The Contractor shall not enter into any subcontract in excess of the \$25,000 with a Contractor that is debarred, suspended, or proposed for debarment unless there is a compelling reason to do so.

(b) The Contractor shall require each proposed first-tier subcontractor, whose subcontract will exceed \$25,000, to disclose to the Contractor, in writing, whether as of the time of award of the subcontract, the subcontractor, or its principles, is or is not debarred, suspended, or proposed for debarment by the Federal Government.

(c) A corporate officer or a designee of the Contractor shall notify the Contracting Officer, in writing, before entering into a subcontract with a party that is debarred, suspended, or proposed for debarment (see FAR 9.404 for information on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs). The notice must include the following:

(1) The name of the subcontractor.

(2) The Contractor's knowledge of the reasons for the subcontractor being on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs.

(3) The compelling reason(s) for doing business with the subcontractor notwithstanding its inclusion on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs.

(4) The systems and procedures the Contractor has established to ensure that it is fully protecting the Government's interests when dealing with such subcontractor in view of the specific basis for the party's debarment, suspension, or proposed debarment.

(End of clause)

52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984) - ALTERNATE I (APR 1984)

The Contractor shall be required to (a) commence work under this contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 01 December 2004.

Special Note to Contractors: The contractor shall be required to complete construction of the Highway 75 and Highway 210 bridges and all associated earthwork and roadwork such that the Highway 75 and Highway 210 bridges and roadways are complete and open to traffic by 1 November 2003.

The completion dates are based on the assumption that the successful offeror will receive the notice to proceed by 18 April 2003. The completion date will be extended by the number of calendar days after the above date that the Contractor receives the notice to proceed, except to the extent that the delay in issuance of the notice to proceed results from the failure of the Contractor to execute the contract and give the required performance and payment bonds within the time specified in the offer.

(End of clause)

52.211-12 LIQUIDATED DAMAGES--CONSTRUCTION (SEP 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of \$1130.00 for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

(End of clause)

52.211-13 TIME EXTENSIONS (SEP 2000)

Time extensions for contract changes will depend upon the extent, if any, by which the changes cause delay in the completion of the various elements of construction. The change order granting the time extension may provide that the contract completion date will be extended only for those specific elements related to the changed work and that the remaining contract completion dates for all other portions of the work will not be altered. The change order also may provide an equitable readjustment of liquidated damages under the new completion schedule.

(End of clause)

52.211-18 VARIATION IN ESTIMATED QUANTITY (APR 1984)

If the quantity of a unit-priced item in this contract is an estimated quantity and the actual quantity of the unit-priced item varies more than 15 percent above or below the estimated quantity, an equitable adjustment in the contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above 115 percent or below 85 percent of the estimated quantity. If the quantity variation is such as to cause an increase in the time necessary for completion, the Contractor may request, in writing, an extension of time, to be received by the Contracting Officer within 10 days from the beginning of the delay, or within such further period as may be granted by the Contracting Officer before the date of final settlement of the contract. Upon the receipt of a written request for an extension, the Contracting Officer shall ascertain the facts and make an adjustment for extending the completion date as, in the judgement of the Contracting Officer, is justified.

52.214-26 *AUDIT AND RECORDS--SEALED BIDDING. (OCT 1997)*

(a) As used in this clause, records includes books, documents, accounting procedures and practices, and other data, regardless of type and regardless of whether such items are in written form, in the form of computer data, or in any other form.

(b) Cost or pricing data. If the Contractor has been required to submit cost or pricing data in connection with the pricing of any modification to this contract, the Contracting Officer, or an authorized representative of the Contracting Officer, in order to evaluate the accuracy, completeness, and currency of the cost or pricing data, shall have the right to examine and audit all of the Contractor's records, including computations and projections, related to--

- (1) The proposal for the modification;
- (2) The discussions conducted on the proposal(s), including those related to negotiating;
- (3) Pricing of the modification; or
- (4) Performance of the modification.

(c) Comptroller General. In the case of pricing any modification, the Comptroller General of the United States, or an authorized representative, shall have the same rights as specified in paragraph (b) of this clause.

(d) Availability. The Contractor shall make available at its office at all reasonable times the materials described in reproduction, until 3 years after final payment under this contract, or for any other period specified in Subpart 4.7 of the Federal Acquisition Regulation (FAR). FAR Subpart 4.7, Contractor Records Retention, in effect on the date of this contract, is incorporated by reference in its entirety and made a part of this contract.

(1) If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for 3 years after any resulting final termination settlement.

(2) Records pertaining to appeals under the Disputes clause or to litigation or the settlement of claims arising under or relating to the performance of this contract shall be made available until disposition of such appeals, litigation, or claims.

(e) The Contractor shall insert a clause containing all the provisions of this clause, including this paragraph (e), in all subcontracts expected to exceed the threshold in FAR 15.403-4(a)(1) for submission of cost or pricing data.

(End of clause)

52.214-27 PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA - MODIFICATIONS - SEALED BIDDING. (OCT 1997)

(a) This clause shall become operative only for any modification to this contract involving aggregate increases and/or decreases in costs, plus applicable profits, expected to exceed the threshold for the submission of cost or pricing data at FAR 15.403-4(a)(1), except that this clause does not apply to a modification if an exception under FAR 15.403-1(b) applies.

(1) Based on adequate price competition;

(2) Based on established catalog or market prices of commercial items sold in substantial quantities to the general public; or

(3) Set by law or regulation.

(b) If any price, including profit, negotiated in connection with any modification under this clause, was increased by any significant amount because

(1) the Contractor or a subcontractor furnished cost or pricing data that were not complete, accurate, and current as certified in its Certificate of Current Cost or Pricing Data;

(2) a subcontractor or prospective subcontractor furnished the Contractor cost or pricing data that were not complete, accurate, and current as certified in the Contractor's Certificate of Current Cost or Pricing Data; or

(3) any of these parties furnished data of any description that were not accurate, the price shall be reduced accordingly and the contract shall be modified to reflect the reduction. This right to a price reduction is limited to that resulting from defects in data relating to modifications for which this clause becomes operative under paragraph (a) above.

(c) Any reduction in the contract price under paragraph (b) above due to defective data from a prospective subcontractor that was not subsequently awarded the subcontract shall be limited to the amount, plus applicable overhead and profit markup, by which:

(1) the actual subcontract; or

(2) the actual cost to the Contractor, if there was no subcontract, was less than the prospective subcontract cost estimate submitted by the Contractor; provided, that the actual subcontract price was not itself affected by defective cost or pricing data.

(d) If the Contracting Officer determines under paragraph (b) of this clause that a price or cost reduction should be made:

(1) the Contractor agrees not to raise the following matters as a defense:

(i) The Contractor or subcontractor was a sole source supplier or otherwise was in a superior bargaining position and thus the price of the contract would not have been modified even if accurate, complete, and current cost or pricing data had been submitted;

(ii) The Contracting Officer should have known that the cost or pricing data in issue were defective even though the Contractor or subcontractor took no affirmative action to bring the character of the data to the attention of the Contracting Officer;

(iii) The contract was based on an agreement about the total cost of the contract and there was no agreement about the cost of each item procured under the contract; or

(iv) The Contractor or subcontractor did not submit a Certificate of Current Cost or Pricing Data.

(2) Except as prohibited by subdivision (d)(2)(ii) of this clause:

(i) an offset in an amount determined appropriate by the Contracting Officer based upon the facts shall be allowed against the amount of a contract price reduction if:

(A) The Contractor certifies to the Contracting Officer that, to the best of the Contractor's knowledge and belief, the Contractor is entitled to the offset in the amount requested; and

(B) The Contractor proves that the cost or pricing data were available before the date of agreement on the price of the contract (or price of the modification) and that the data were not submitted before such date.

(ii) An offset shall not be allowed if:

(A) The understated data was known by the Contractor to be understated when the Certificate of Current Cost or Pricing Data was signed; or (B) The Government proves that the facts demonstrate that the contract price would not have increased in the amount to be offset even if the available data had been submitted before the date of agreement on price.

(e) If any reduction in the contract price under this clause reduces the price of items for which payment was made prior to the date of the modification reflecting the price reduction, the Contractor shall be liable to and shall pay the United States at the time such overpayment is repaid:

(1) Simple interest on the amount of such overpayment to be computed from the date(s) of overpayment to the Contractor to the date the Government is repaid by the Contractor at the applicable underpayment rate effective for each quarter prescribed by the Secretary of the Treasury under 26 U.S.C. 6621(a)(2); and

(2) A penalty equal to the amount of the overpayment, if the Contractor or subcontractor knowingly submitted cost or pricing data which were incomplete, inaccurate, or noncurrent.

(End of clause)

52.214-28 SUBCONTRACTOR COST OR PRICING DATA - MODIFICATIONS - SEALED BIDDING. (OCT 1997)

(a) The requirements of paragraphs (b) and (c) of this clause shall:

(1) become operative only for any modification to this contract involving aggregate increases and/or decreases in costs, plus applicable profits, expected to exceed the threshold for submission of cost or pricing data at (FAR) 48 CFR 15.403-4(a)(1); and

(2) be limited to such modifications.

(b) Before awarding any subcontract expected to exceed the threshold for submission of cost or pricing data at FAR 15.403-4(a)(1), on the date of agreement on price or the date of award, whichever is later; or before pricing any subcontract modifications involving aggregate increases and/or decreases in costs, plus applicable profits, expected to exceed the threshold for submission of cost or pricing data at FAR 15.403-4(a)(1), the Contractor shall require the subcontractor to submit cost or pricing data (actually or by specific identification in writing), unless an exception under FAR 15.403-1(b) applies.

(1) Based on adequate price competition;

(2) Based on established catalog or market prices of commercial items sold in substantial quantities to the general public; or

(3) Set by law or regulation.

(c) The Contractor shall require the subcontractor to certify in substantially the form prescribed in subsection 15.406-2 of the Federal Acquisition Regulation that, to the best of its knowledge and belief, the data submitted under paragraph (b) above were accurate, complete, and current as of the date of agreement on the negotiated price of the subcontract or subcontract modification.

(d) The Contractor shall insert the substance of this clause, including this paragraph (d), in each subcontract that, when entered into, exceeds the threshold for submission of cost or pricing data at FAR 15.403-4(a)(1).

(End of clause)

52.219-4 NOTICE OF PRICE EVALUATION PREFERENCE FOR HUBZONE SMALL BUSINESS CONCERNS (JAN 1999)

(a) Definition. HUBZone small business concern, as used in this clause, means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.

(b) Evaluation preference. (1) Offers will be evaluated by adding a factor of 10 percent to the price of all offers, except-

(i) Offers from HUBZone small business concerns that have not waived the evaluation preference;

(ii) Otherwise successful offers from small business concerns;

(iii) Otherwise successful offers of eligible products under the Trade Agreements Act when the dollar threshold for application of the Act is exceeded (see 25.402 of the Federal Acquisition Regulation (FAR)); and

(iv) Otherwise successful offers where application of the factor would be inconsistent with a Memorandum of Understanding or other international agreement with a foreign government.

(2) The factor of 10 percent shall be applied on a line item basis or to any group of items on which award may be made. Other evaluation factors described in the solicitation shall be applied before application of the factor.

(3) A concern that is both a HUBZone small business concern and a small disadvantaged business concern will receive the benefit of both the HUBZone small business price evaluation preference and the small disadvantaged business price evaluation adjustment (see FAR clause 52.219-23). Each applicable price evaluation preference or adjustment shall be calculated independently against an offeror's base offer.

These individual preference amounts shall be added together to arrive at the total evaluated price for that offer.

(c) Waiver of evaluation preference. A HUBZone small business concern may elect to waive the evaluation preference, in which case the factor will be added to its offer for evaluation purposes. The agreements in paragraph (d) of this clause do not apply if the offeror has waived the evaluation preference.

___ Offeror elects to waive the evaluation preference.

(d) Agreement. A HUBZone small business concern agrees that in the performance of the contract, in the case of a contract for

(1) Services (except construction), at least 50 percent of the cost of personnel for contract performance will be spent for employees of the concern or employees of other HUBZone small business concerns;

(2) Supplies (other than procurement from a nonmanufacturer of such supplies), at least 50 percent of the cost of manufacturing, excluding the cost of materials, will be performed by the concern or other HUBZone small business concerns;

(3) General construction, at least 15 percent of the cost of the contract performance incurred for personnel will be will be spent on the concern's employees or the employees of other HUBZone small business concerns; or

(4) Construction by special trade contractors, at least 25 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns.

(e) A HUBZone joint venture agrees that in the performance of the contract, the applicable percentage specified in paragraph (d) of this clause will be performed by the HUBZone small business participant or participants.

(f) A HUBZone small business concern nonmanufacturer agrees to furnish in performing this contract only end items manufactured or produced by HUBZone small business manufacturer concerns. This paragraph does not apply in connection with construction or service contracts.

(End of clause)

52.219-8 UTILIZATION OF SMALL BUSINESS CONCERNS (OCT 2000)

(a) It is the policy of the United States that small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small business concerns, HUBZone small business concerns, small disadvantaged business concerns, and women-owned small business concerns shall have the maximum practicable opportunity to participate in performing contracts let by any Federal agency, including contracts and subcontracts for subsystems, assemblies, components, and related services for major systems. It is further the policy of the United States that its prime contractors establish procedures to ensure the timely payment of amounts due pursuant to the terms of their subcontracts with small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small business concerns, HUBZone small business concerns, small disadvantaged business concerns, and women-owned small business concerns.

(b) The Contractor hereby agrees to carry out this policy in the awarding of subcontracts to the fullest extent consistent with efficient contract performance. The Contractor further agrees to cooperate in any studies or surveys as may be conducted by the United States Small Business Administration or the awarding agency of the United States as may be necessary to determine the extent of the Contractor's compliance with this clause.

Definitions. As used in this contract--

HUBZone small business concern means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.

Service-disabled veteran-owned small business concern--

(1) Means a small business concern--

(i) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

(ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.

(2) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16).

Small business concern means a small business as defined pursuant to Section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto.

Small disadvantaged business concern means a small business concern that represents, as part of its offer that--

(1) It has received certification as a small disadvantaged business concern consistent with 13 CFR part 124, subpart B;

(2) No material change in disadvantaged ownership and control has occurred since its certification;

(3) Where the concern is owned by one or more individuals, the net worth of each individual upon whom the certification is based does not exceed \$750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and

(4) It is identified, on the date of its representation, as a certified small disadvantaged business in the database maintained by the Small Business Administration (PRO-Net).

Veteran-owned small business concern means a small business concern--

(1) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and

(2) The management and daily business operations of which are controlled by one or more veterans.

Women-owned small business concern means a small business concern--

(1) That is at least 51 percent owned by one or more women, or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

(d) Contractors acting in good faith may rely on written representations by their subcontractors regarding their status as a small business concern, a veteran-owned small business concern, a service-disabled veteran-owned small business concern, a HUBZone small business concern, a small disadvantaged business concern, or a women-owned small business concern.

(End of clause)

52.219-9 SMALL BUSINESS SUBCONTRACTING PLAN (JAN 2002)--ALTERNATE I (OCT 2001).

(a) This clause does not apply to small business concerns.

(b) Definitions. As used in this clause--

Commercial item means a product or service that satisfies the definition of commercial item in section 2.101 of the Federal Acquisition Regulation.

Commercial plan means a subcontracting plan (including goals) that covers the offeror's fiscal year and that applies to the entire production of commercial items sold by either the entire company or a portion thereof (e.g., division, plant, or product line).

Individual contract plan means a subcontracting plan that covers the entire contract period (including option periods), applies to a specific contract, and has goals that are based on the offeror's planned subcontracting in support of the specific contract, except that indirect costs incurred for common or joint purposes may be allocated on a prorated basis to the contract.

Master plan means a subcontracting plan that contains all the required elements of an individual contract plan, except goals, and may be incorporated into individual contract plans, provided the master plan has been approved.

Subcontract means any agreement (other than one involving an employer-employee relationship) entered into by a Federal Government prime Contractor or subcontractor calling for supplies or services required for performance of the contract or subcontract.

(c) The apparent low bidder, upon request by the Contracting Officer, shall submit a subcontracting plan, where applicable, that separately addresses subcontracting with small business, veteran-owner small business, HUBZone

small business, small disadvantaged business, and women-owned small business concerns. If the bidder is submitting an individual contract plan, the plan must separately address subcontracting with small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns, with a separate part for the basic contract and separate parts for each option (if any). The plan shall be included in and made a part of the resultant contract. The subcontracting plan shall be submitted within the time specified by the Contracting Officer. Failure to submit the subcontracting plan shall make the bidder ineligible for the award of a contract.

(d) The offeror's subcontracting plan shall include the following:

(1) Goals, expressed in terms of percentages of total planned subcontracting dollars, for the use of small business, veteran-owned small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns as subcontractors. The offeror shall include all subcontracts that contribute to contract performance, and may include a proportionate share of products and services that are normally allocated as indirect costs.

(2) A statement of--

(i) Total dollars planned to be subcontracted for an individual contract plan; or the offeror's total projected sales, expressed in dollars, and the total value of projected subcontracts to support the sales for a commercial plan;

(ii) Total dollars planned to be subcontracted to small business concerns;

(iii) Total dollars planned to be subcontracted to veteran-owned small business concerns;

(iv) Total dollars planned to be subcontracted to HUBZone small business concerns;

(v) Total dollars planned to be subcontracted to small disadvantaged business concerns; and

(vi) Total dollars planned to be subcontracted to women-owned small business concerns.

(3) A description of the principal types of supplies and services to be subcontracted, and an identification of the types planned for subcontracting to--

(i) Small business concerns;

(ii) Veteran-owned small business concerns;

(iii) HUBZone small business concerns;

(iv) Small disadvantaged business concerns; and

(v) Women-owned small business concerns.

(4) A description of the method used to develop the subcontracting goals in paragraph (d)(1) of this clause.

(5) A description of the method used to identify potential sources for solicitation purposes (e.g., existing company source lists, the Procurement Marketing and Access Network (PRO-Net) of the Small Business Administration (SBA), veterans service organizations, the National Minority Purchasing Council Vendor Information Service, the Research and Information Division of the Minority Business Development Agency in the Department of Commerce, or small, HUBZone, small disadvantaged, and women-owned small business trade associations). A firm may rely on the information contained in PRO-Net as an accurate representation of a concern's size and ownership characteristics for the purposes of maintaining a small, veteran-owned small, HUBZone small, small disadvantaged, and women-owned

small business source list. Use of PRO-Net as its source list does not relieve a firm of its responsibilities (e.g., outreach, assistance, counseling, or publicizing subcontracting opportunities) in this clause.

(6) A statement as to whether or not the offeror included indirect costs in establishing subcontracting goals, and a description of the method used to determine the proportionate share of indirect costs to be incurred with—

- (i) Small business concerns;
- (ii) Veteran-owned small business concerns;
- (iii) HUBZone small business concerns;
- (iv) Small disadvantaged business concerns; and
- (v) Women-owned small business concerns.

(7) The name of the individual employed by the offeror who will administer the offeror's subcontracting program, and a description of the duties of the individual.

(8) A description of the efforts the offeror will make to assure that small business, veteran-owned small business, HUBZone small business, small disadvantaged business and women-owned small business concerns have an equitable opportunity to compete for subcontracts.

(9) Assurances that the offeror will include the clause of this contract entitled "Utilization of Small Business Concerns" in all subcontracts that offer further subcontracting opportunities, and that the offeror will require all subcontractors (except small business concerns) that receive subcontracts in excess of \$500,000 (\$1,000,000 for construction of any public facility) to adopt a subcontracting plan that complies with the requirements of this clause.

(10) Assurances that the offeror will--

- (i) Cooperate in any studies or surveys as may be required;
- (ii) Submit periodic reports so that the Government can determine the extent of compliance by the offeror with the subcontracting plan;
- (iii) Submit Standard Form (SF) 294, Subcontracting Report for Individual Contracts, and/or SF 295, Summary Subcontract Report, in accordance with paragraph (j) of this clause. The reports shall provide information on subcontract awards to small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small business concerns, small disadvantaged business concerns, women-owned small business concerns, and Historically Black Colleges and Universities and Minority Institutions. Reporting shall be in accordance with the instructions on the forms or as provided in agency regulations.
- (iv) Ensure that its subcontractors agree to submit SF 294 and SF 295.

(11) A description of the types of records that will be maintained concerning procedures that have been adopted to comply with the requirements and goals in the plan, including establishing source lists; and a description of the offeror's efforts to locate small business, veteran-owned small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns and award subcontracts to them. The records shall include at least the following (on a plant-wide or company-wide basis, unless otherwise indicated)

- (i) Source lists (e.g., PRO-Net), guides, and other data that identify small business, veteran-owner small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns.

(ii) Organizations contacted in an attempt to locate sources that are small business, veteran-owned small business, HUBZone small business, small disadvantaged business, or women-owned small business concerns.

(iii) Records on each subcontract solicitation resulting in an award of more than \$100,000, indicating--

(A) Whether small business concerns were solicited and, if not, why not;

(B) Whether veteran-owned small business concerns were solicited and, if not, why not;

(C) Whether HUBZone small business concerns were solicited and, if not, why not;

(D) Whether small disadvantaged business concerns were solicited and, if not, why not;

(E) Whether women-owned small business concerns were solicited and, if not, why not; and

(F) If applicable, the reason award was not made to a small business concern.

(iv) Records of any outreach efforts to contact--

(A) Trade associations;

(B) Business development organizations;

(C) Conferences and trade fairs to locate small, HUBZone small, small disadvantaged, and women-owned small business sources; and

(D) Veterans service organizations.

(v) Records of internal guidance and encouragement provided to buyers through--

(A) Workshops, seminars, training, etc.; and

(B) Monitoring performance to evaluate compliance with the program's requirements.

(vi) On a contract-by-contract basis, records to support award data submitted by the offeror to the Government, including the name, address, and business size of each subcontractor. Contractors having commercial plans need not comply with this requirement.

(e) In order to effectively implement this plan to the extent consistent with efficient contract performance, the Contractor shall perform the following functions:

(1) Assist small business, veteran-owner small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns by arranging solicitations, time for the preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation by such concerns. Where the Contractor's lists of potential small business, veteran-owner small business, HUBZone small business, small disadvantaged business, and women-owned small business subcontractors are excessively long, reasonable effort shall be made to give all such small business concerns an opportunity to compete over a period of time.

(2) Provide adequate and timely consideration of the potentialities of small business, veteran-owner small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns in all "make-or-buy" decisions.

(3) Counsel and discuss subcontracting opportunities with representatives of small business, veteran-owner small business, HUBZone small business, small disadvantaged business, and women-owned small business firms.

(4) Provide notice to subcontractors concerning penalties and remedies for misrepresentations of business status as small, veteran-owner small business, HUBZone small, small disadvantaged, or women-owned small business for the purpose of obtaining a subcontract that is to be included as part or all of a goal contained in the Contractor's subcontracting plan.

(f) A master plan on a plant or division-wide basis that contains all the elements required by paragraph (d) of this clause, except goals, may be incorporated by reference as a part of the subcontracting plan required of the offeror by this clause; provided--

(1) the master plan has been approved, (2) the offeror ensures that the master plan is updated as necessary and provides copies of the approved master plan, including evidence of its approval, to the Contracting Officer, and (3) goals and any deviations from the master plan deemed necessary by the Contracting Officer to satisfy the requirements of this contract are set forth in the individual subcontracting plan.

(g) A commercial plan is the preferred type of subcontracting plan for contractors furnishing commercial items. The commercial plan shall relate to the offeror's planned subcontracting generally, for both commercial and Government business, rather than solely to the Government contract. Commercial plans are also preferred for subcontractors that provide commercial items under a prime contract, whether or not the prime contractor is supplying a commercial item.

(h) Prior compliance of the offeror with other such subcontracting plans under previous contracts will be considered by the Contracting Officer in determining the responsibility of the offeror for award of the contract.

(i) The failure of the Contractor or subcontractor to comply in good faith with (1) the clause of this contract entitled "Utilization Of Small Business Concerns," or (2) an approved plan required by this clause, shall be a material breach of the contract.

(j) The Contractor shall submit the following reports:

(1) Standard Form 294, Subcontracting Report for Individual Contracts. This report shall be submitted to the Contracting Officer semiannually and at contract completion. The report covers subcontract award data related to this contract. This report is not required for commercial plans.

(2) Standard Form 295, Summary Subcontract Report. This report encompasses all of the contracts with the awarding agency. It must be submitted semi-annually for contracts with the Department of Defense and annually for contracts with civilian agencies. If the reporting activity is covered by a commercial plan, the reporting activity must report annually all subcontract awards under that plan. All reports submitted at the close of each fiscal year (both individual and commercial plans) shall include a breakout, in the Contractor's format, of subcontract awards, in whole dollars, to small disadvantaged business concerns by North American Industry Classification System (NAICS) Industry Subsector. For a commercial plan, the Contractor may obtain from each of its subcontractors a predominant NAICS Industry Subsector and report all awards to that subcontractor under its predominant NAICS Industry Subsector.

(End of clause)

(a) Failure to make a good faith effort to comply with the subcontracting plan, as used in this clause, means a willful or intentional failure to perform in accordance with the requirements of the subcontracting plan approved under the clause in this contract entitled "Small Business Subcontracting Plan," or willful or intentional action to frustrate the plan.

(b) Performance shall be measured by applying the percentage goals to the total actual subcontracting dollars or, if a commercial plan is involved, to the pro rata share of actual subcontracting dollars attributable to Government contracts covered by the commercial plan. If, at contract completion or, in the case of a commercial plan, at the close of the fiscal year for which the plan is applicable, the Contractor has failed to meet its subcontracting goals and the Contracting Officer decides in accordance with paragraph (c) of this clause that the Contractor failed to make a good faith effort to comply with its subcontracting plan, established in accordance with the clause in this contract entitled "Small Business Subcontracting Plan," the Contractor shall pay the Government liquidated damages in an amount stated. The amount of probable damages attributable to the Contractor's failure to comply shall be an amount equal to the actual dollar amount by which the Contractor failed to achieve each subcontract goal.

(c) Before the Contracting Officer makes a final decision that the Contractor has failed to make such good faith effort, the Contracting Officer shall give the Contractor written notice specifying the failure and permitting the Contractor to demonstrate what good faith efforts have been made and to discuss the matter. Failure to respond to the notice may be taken as an admission that no valid explanation exists. If, after consideration of all the pertinent data, the Contracting Officer finds that the Contractor failed to make a good faith effort to comply with the subcontracting plan, the Contracting Officer shall issue a final decision to that effect and require that the Contractor pay the Government liquidated damages as provided in paragraph (b) of this clause.

(d) With respect to commercial plans, the Contracting Officer who approved the plan will perform the functions of the Contracting Officer under this clause on behalf of all agencies with contracts covered by the commercial plan.

(e) The Contractor shall have the right of appeal, under the clause in this contract entitled Disputes, from any final decision of the Contracting Officer.

(f) Liquidated damages shall be in addition to any other remedies that the Government may have.

(End of clause)

52.222-1 NOTICE TO THE GOVERNMENT OF LABOR DISPUTES (FEB 1997)

If the Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of this contract, the Contractor shall immediately give notice, including all relevant information, to the Contracting Officer.

(End of clause)

52.222-3 CONVICT LABOR (AUG 1996)

The Contractor agrees not to employ in the performance of this contract any person undergoing a sentence of imprisonment which has been imposed by any court of a State, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, or the Trust Territory of the Pacific Islands. This limitation, however, shall not prohibit the employment by the Contractor in the performance of this contract of persons on parole or probation to work at paid employment during the term of their sentence or persons who have been pardoned or who have served their terms. Nor shall it prohibit the employment by the Contractor in the performance of this contract of persons confined for violation of the laws of any of the States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, or the Trust Territory of the Pacific Islands who are authorized to work at paid employment in the community under the laws of such jurisdiction, if--

- (a)(1) The worker is paid or is in an approved work training program on a voluntary basis;
 - (2) Representatives of local union central bodies or similar labor union organizations have been consulted;
 - (3) Such paid employment will not result in the displacement of employed workers, or be applied in skills, crafts, or trades in which there is a surplus of available gainful labor in the locality, or impair existing contracts for services; and
 - (4) The rates of pay and other conditions of employment will not be less than those paid or provided for work of a similar nature in the locality in which the work is being performed; and
- (b) The Attorney General of the United States has certified that the work-release laws or regulations of the jurisdiction involved are in conformity with the requirements of Executive Order 11755, as amended by Executive Orders 12608 and 12943.

(End of clause)

52.222-4 CONTRACT WORK HOURS AND SAFETY STANDARDS ACT - OVERTIME COMPENSATION. (SEP 2000)

- (a) Overtime requirements. No Contractor or subcontractor employing laborers or mechanics (see Federal Acquisition Regulation 22.300) shall require or permit them to work over 40 hours in any workweek unless they are paid at least 1 and 1/2 times the basic rate of pay for each hour worked over 40 hours.
- (b) Violation; liability for unpaid wages; liquidated damages. The responsible Contractor and subcontractor are liable for unpaid wages if they violate the terms in paragraph (a) of this clause. In addition, the Contractor and subcontractor are liable for liquidated damages payable to the Government. The Contracting Officer will assess liquidated damages at the rate of \$10 per affected employee for each calendar day on which the employer required or permitted the employee to work in excess of the standard workweek of 40 hours without paying overtime wages required by the Contract Work Hours and Safety Standards Act.

(c) Withholding for unpaid wages and liquidated damages. The Contracting Officer will withhold from payments due under the contract sufficient funds required to satisfy any Contractor or subcontractor liabilities for unpaid wages and liquidated damages. If amounts withheld under the contract are insufficient to satisfy Contractor or subcontractor liabilities, the Contracting Officer will withhold payments from other Federal or Federally assisted contracts held by the same Contractor that are subject to the Contract Work Hours and Safety Standards Act.

(d) Payrolls and basic records.

(1) The Contractor and its subcontractors shall maintain payrolls and basic payroll records for all laborers and mechanics working on the contract during the contract and shall make them available to the Government until 3 years after contract completion. The records shall contain the name and address of each employee, social security number, labor classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. The records need not duplicate those required for construction work by Department of Labor regulations at 29 CFR 5.5(a)(3) implementing the Davis-Bacon Act.

(2) The Contractor and its subcontractors shall allow authorized representatives of the Contracting Officer or the Department of Labor to inspect, copy, or transcribe records maintained under paragraph (d)(1) of this clause. The Contractor or subcontractor also shall allow authorized representatives of the Contracting Officer or Department of Labor to interview employees in the workplace during working hours.

(e) Subcontracts. The Contractor shall insert the provisions set forth in paragraphs (a) through (d) of this clause in subcontracts exceeding \$100,000 and require subcontractors to include these provisions in any lower tier subcontracts. The Contractor shall be responsible for compliance by any subcontractor or lower-tier subcontractor with the provisions set forth in paragraphs (a) through (d) of this clause.

(End of clause)

52.222-6 DAVIS-BACON ACT (FEB 1995)

(a) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (d) of this clause; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such period. Such laborers and mechanics shall be paid not less than the appropriate wage rate and fringe benefits in the wage determination for the classification of work actually performed, without regard to skill, except as provided in the clause entitled Apprentices and Trainees. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein; provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under

paragraph (b) of this clause) and the Davis -Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(b)(1) The Contracting Officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The Contracting Officer shall approve an additional classification and wage rate and fringe benefits therefor only when all the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination.

(ii) The classification is utilized in the area by the construction industry.

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the Contracting Officer agree on the classification and wage rate (including the amount designated for fringe benefits, where appropriate), a report of the action taken shall be sent by the Contracting Officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator or an authorized representative will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the Contracting Officer or will notify the Contracting Officer within the 30-day period that additional time is necessary.

(3) In the event the Contractor, the laborers or mechanics to be employed in the classification, or their representatives, and the Contracting Officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the Contracting Officer shall refer the questions, including the views of all interested parties and the recommendation of the Contracting Officer, to the Administrator of the Wage and Hour Division for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the Contracting Officer or will notify the Contracting Officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits, where appropriate) determined pursuant to subparagraphs (b)(2) and (b)(3) of this clause shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(c) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(d) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program; provided, That the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis -Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(End of clause)

52.222-7 WITHHOLDING OF FUNDS (FEB 1988)

The Contracting Officer shall, upon his or her own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same Prime Contractor, or any other Federally assisted contract subject to Davis -Bacon prevailing wage requirements, which is held by the same Prime Contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the Contracting Officer may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(End of clause)

52.222-8 PAYROLLS AND BASIC RECORDS (FEB 1988)

(a) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of 3 years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis -Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found, under paragraph (d) of the clause entitled Davis -Bacon Act, that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis -Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(b)(1) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Contracting Officer. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under paragraph (a) of this clause. This information may be submitted in any form desired. Optional Form WH-347 (Federal Stock Number 029-005-00014-1) is available for this purpose and may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. The Prime Contractor is responsible for the submission of copies of payrolls by all subcontractors.

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify--

(i) That the payroll for the payroll period contains the information required to be maintained under paragraph (a) of

this clause and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR Part 3; and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph (b)(2) of this clause.

(4) The falsification of any of the certifications in this clause may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.

(c) The Contractor or subcontractor shall make the records required under paragraph (a) of this clause available for inspection, copying, or transcription by the Contracting Officer or authorized representatives of the Contracting Officer or the Department of Labor. The Contractor or subcontractor shall permit the Contracting Officer or representatives of the Contracting Officer or the Department of Labor to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit required records or to make them available, the Contracting Officer may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(End of clause)

52.222-9 APPRENTICES AND TRAINEES (FEB 1988)

(a) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in this paragraph, shall be paid not less than the applicable wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the

journeyman hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(b) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed in the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate in the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate in the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate in the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(c) Equal employment opportunity. The utilization of apprentices, trainees, and journeymen under this clause shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

(End of clause)

52.222-10 COMPLIANCE WITH COPELAND ACT REQUIREMENTS (FEB 1988)

The Contractor shall comply with the requirements of 29 CFR Part 3, which are hereby incorporated by reference in this contract.

(End of clause)

52.222-11 SUBCONTRACTS (LABOR STANDARDS (FEB 1988))

(a) The Contractor or subcontractor shall insert in any subcontracts the clauses entitled Davis -Bacon Act, Contract Work Hours and Safety Standards Act-Overtime Compensation, Apprentices and Trainees, Payrolls and Basic Records, Compliance with Copeland Act Requirements, Withholding of Funds, Subcontracts (Labor Standards), Contract Termination-Debarment, Disputes Concerning Labor Standards, Compliance with Davis -Bacon and Related Act Regulations, and Certification of Eligibility, and such other clauses as the Contracting Officer may, by appropriate instructions, require, and also a clause requiring subcontractors to include these clauses in any lower tier subcontracts. The Prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with all the contract clauses cited in this paragraph.

(b)(1) Within 14 days after award of the contract, the Contractor shall deliver to the Contracting Officer a completed Statement and Acknowledgment Form (SF 1413) for each subcontract, including the subcontractor's signed and dated acknowledgment that the clauses set forth in paragraph (a) of this clause have been included in the subcontract.

(2) Within 14 days after the award of any subsequently awarded subcontract the Contractor shall deliver to the Contracting Officer an updated completed SF 1413 for such additional subcontract.

(End of clause)

52.222-12 CONTRACT TERMINATION--DEBARMENT (FEB 1988)

A breach of the contract clauses entitled Davis -Bacon Act, Contract Work Hours and Safety Standards Act--Overtime Compensation, Apprentices and Trainees, Payrolls and Basic Records, Compliance with Copeland Act Requirements, Subcontracts (Labor Standards), Compliance with Davis -Bacon and Related Act Regulations, or Certification of Eligibility may be grounds for termination of the contract, and for debarment as a Contractor and subcontractor as provided in 29 CFR 5.12.

(End of clause)

52.222-13 COMPLIANCE WITH DAVIS-BACON AND RELATED ACT REGULATIONS (FEB 1988)

All rulings and interpretations of the Davis -Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are hereby incorporated by reference in this contract.

(End of clause)

52.222-14 DISPUTES CONCERNING LABOR STANDARDS (FEB 1988)

The United States Department of Labor has set forth in 29 CFR Parts 5, 6, and 7 procedures for resolving disputes concerning labor standards requirements. Such disputes shall be resolved in accordance with those procedures and not the Disputes clause of this contract. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

(End of clause)

52.222-15 CERTIFICATION OF ELIGIBILITY (FEB 1988)

(a) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis -Bacon Act or 29 CFR 5.12(a)(1).

(b) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis -Bacon Act or 29 CFR 5.12(a)(1).

(c) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(End of clause)

52.222-21 PROHIBITION OF SEGREGATED FACILITIES (FEB 1999)

(a) Segregated facilities, as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(b) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Opportunity clause in this contract.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Opportunity clause of this contract.

(End of clause)

52.222-23 NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (FEB 1999)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
0.7%	6.9%

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

(d) The Contractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance, U.S. Department of Labor, within 10 working days following award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the --

(1) Name, address, and telephone number of the subcontractor;

(2) Employer's identification number of the subcontractor;

- (3) Estimated dollar amount of the subcontract;
 - (4) Estimated starting and completion dates of the subcontract; and
 - (5) Geographical area in which the subcontract is to be performed.
- (e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is Breckenridge (Wilkin County), Minnesota.
- (End of provision)

52.222-26 *EQUAL OPPORTUNITY (APR 2002)*

- (a) Definition. United States, as used in this clause, means the 50 States, the District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands, and Wake Island.
- (b) If, during any 12-month period (including the 12 months preceding the award of this contract), the Contractor has been or is awarded nonexempt Federal contracts and/or subcontracts that have an aggregate value in excess of \$10,000, the Contractor shall comply with paragraphs (b)(1) through (b)(11) of this clause, except for work performed outside the United States by employees who were not recruited within the United States. Upon request, the Contractor shall provide information necessary to determine the applicability of this clause.
- (1) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. However, it shall not be a violation of this clause for the Contractor to extend a publicly announced preference in employment to Indians living on or near an Indian reservation, in connection with employment opportunities on or near an Indian reservation, as permitted by 41 CFR 60-1.5.
- (2) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. This shall include, but not be limited to, (i) employment, (ii) upgrading, (iii) demotion, (iv) transfer, (v) recruitment or recruitment advertising, (vi) layoff or termination, (vii) rates of pay or other forms of compensation, and (viii) selection for training, including apprenticeship.
- (3) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.
- (4) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
- (5) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.
- (6) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.

(7) The Contractor shall furnish to the contracting agency all information required by Executive Order 11246, as amended, and by the rules, regulations, and orders of the Secretary of Labor. The Contractor shall also file Standard Form 100 (EEO-1), or any successor form, as prescribed in 41 CFR part 60-1. Unless the Contractor has filed within the 12 months preceding the date of contract award, the Contractor shall, within 30 days after contract award, apply to either the regional Office of Federal Contract Compliance Programs (OFCCP) or the local office of the Equal Employment Opportunity Commission for the necessary forms.

(8) The Contractor shall permit access to its premises, during normal business hours, by the contracting agency or the OFCCP for the purpose of conducting on-site compliance evaluations and complaint investigations. The Contractor shall permit the Government to inspect and copy any books, accounts, records (including computerized records), and other material that may be relevant to the matter under investigation and pertinent to compliance with Executive Order 11246, as amended, and rules and regulations that implement the Executive Order.

(9) If the OFCCP determines that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts, under the procedures authorized in Executive Order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended; in the rules, regulations, and orders of the Secretary of Labor; or as otherwise provided by law.

(10) The Contractor shall include the terms and conditions of subparagraphs (b)(1) through (11) of this clause in every subcontract or purchase order that is not exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each subcontractor or vendor.

(11) The Contractor shall take such action with respect to any subcontract or purchase order as the contracting officer may direct as a means of enforcing these terms and conditions, including sanctions for noncompliance; provided, that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of any direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

(c) Notwithstanding any other clause in this contract, disputes relative to this clause will be governed by the procedures in 41 CFR 60-1.1.

(End of clause)

52.222-27 AFFIRMATIVE ACTION COMPLIANCE REQUIREMENTS FOR CONSTRUCTION (FEB 1999)

(a) Definitions. "Covered area," as used in this clause, means the geographical area described in the solicitation for this contract.

"Deputy Assistant Secretary," as used in this clause, means Deputy Assistant Secretary for Federal Contract Compliance, U.S. Department of Labor, or a designee.

"Employer's identification number," as used in this clause, means the Federal Social Security number used on the employer's quarterly federal tax return, U.S. Treasury Department Form 941.

"Minority," as used in this clause, means--

(1) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

(2) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands);

(3) Black (all persons having origins in any of the black African racial groups not of Hispanic origin); and

(4) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race).

(b) If the Contractor, or a subcontractor at any tier, subcontracts a portion of the work involving any construction trade, each such subcontract in excess of \$10,000 shall include this clause and the Notice containing the goals for minority and female participation stated in the solicitation for this contract.

(c) If the Contractor is participating in a Hometown Plan (41 CFR 60-4) approved by the U.S. Department of Labor in a covered area, either individually or through an association, its affirmative action obligations on all work in the plan area (including goals) shall comply with the plan for those trades that have unions participating in the plan. Contractors must be able to demonstrate participation in, and compliance with, the provisions of the plan. Each Contractor or subcontractor participating in an approved plan is also required to comply with its obligations under the Equal Opportunity clause, and to make a good faith effort to achieve each goal under the plan in each trade in which it has employees. The overall good-faith performance by other Contractors or subcontractors toward a goal in an approved plan does not excuse any Contractor's or subcontractor's failure to make good-faith efforts to achieve the plan's goals.

(d) The Contractor shall implement the affirmative action procedures in subparagraphs (g)(1) through (16) of this clause. The goals stated in the solicitation for this contract are expressed as percentages of the total hours of employment and training of minority and female utilization that the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for the geographical area where that work is actually performed. The Contractor is expected to make substantially uniform progress toward its goals in each craft.

(e) Neither the terms and conditions of any collective bargaining agreement, nor the failure by a union with which the Contractor has a collective bargaining agreement, to refer minorities or women shall excuse the Contractor's obligations under this clause, Executive Order 11246, as amended, or the regulations thereunder.

(f) In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

(g) The Contractor shall take affirmative action to ensure equal employment opportunity. The evaluation of the Contractor's compliance with this clause shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully and implement affirmative action steps at least as extensive as the following:

(1) Ensure a working environment free of harassment, intimidation, and coercion at all sites and in all facilities where the Contractor's employees are assigned to work. The Contractor, if possible, will assign two or more women to each

construction project. The Contractor shall ensure that foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at these sites or facilities.

(2) Establish and maintain a current list of sources for minority and female recruitment. Provide written notification to minority and female recruitment sources and community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

(3) Establish and maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant, referrals of minorities or females from unions, recruitment sources, or community organizations, and the action taken with respect to each individual. If an individual was sent to the union hiring hall for referral and not referred back to the Contractor by the union or, if referred back, not employed by the Contractor, this shall be documented in the file, along with whatever additional actions the Contractor may have taken.

(4) Immediately notify the Deputy Assistant Secretary when the union or unions with which the Contractor has a collective bargaining agreement has not referred back to the Contractor a minority or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

(5) Develop on-the-job training opportunities and/or participate in training programs for the area that expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under subparagraph (g)(2) of this clause.

(6) Disseminate the Contractor's equal employment policy by--

(i) Providing notice of the policy to unions and to training, recruitment, and outreach programs, and requesting their cooperation in assisting the Contractor in meeting its contract obligations;

(ii) Including the policy in any policy manual and in collective bargaining agreements;

(iii) Publicizing the policy in the company newspaper, annual report, etc.;

(iv) Reviewing the policy with all management personnel and with all minority and female employees at least once a year; and

(v) Posting the policy on bulletin boards accessible to employees at each location where construction work is performed.

(7) Review, at least annually, the Contractor's equal employment policy and affirmative action obligations with all employees having responsibility for hiring, assignment, layoff, termination, or other employment decisions. Conduct review of this policy with all on-site supervisory personnel before initiating construction work at a job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

(8) Disseminate the Contractor's equal employment policy externally by including it in any advertising in the news media, specifically including minority and female news media. Provide written notification to, and discuss this policy with, other Contractors and subcontractors with which the Contractor does or anticipates doing business.

(9) Direct recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students, and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than 1 month before the date for acceptance of

applications for apprenticeship or training by any recruitment source, send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

(10) Encourage present minority and female employees to recruit minority persons and women. Where reasonable, provide after-school, summer, and vacation employment to minority and female youth both on the site and in other areas of the Contractor's workforce.

(11) Validate all tests and other selection requirements where required under 41 CFR 60-3.

(12) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities. Encourage these employees to seek or to prepare for, through appropriate training, etc., opportunities for promotion.

(13) Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment-related activities to ensure that the Contractor's obligations under this contract are being carried out.

(14) Ensure that all facilities and company activities are nonsegregated except that separate or single-user rest rooms and necessary dressing or sleeping areas shall be provided to assure privacy between the sexes.

(15) Maintain a record of solicitations for subcontracts for minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

(16) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's equal employment policy and affirmative action obligations.

(h) The Contractor is encouraged to participate in voluntary associations that may assist in fulfilling one or more of the affirmative action obligations contained in subparagraphs (g)(1) through (16) of this clause. The efforts of a contractor association, joint contractor-union, contractor-community, or similar group of which the contractor is a member and participant may be asserted as fulfilling one or more of its obligations under subparagraphs (g)(1) through (16) of this clause, provided the Contractor--

(1) Actively participates in the group;

(2) Makes every effort to ensure that the group has a positive impact on the employment of minorities and women in the industry;

(3) Ensures that concrete benefits of the program are reflected in the Contractor's minority and female workforce participation;

(4) Makes a good-faith effort to meet its individual goals and timetables; and

(5) Can provide access to documentation that demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply is the Contractor's, and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

(i) A single goal for minorities and a separate single goal for women shall be established. The Contractor is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and nonminority. Consequently, the Contractor may be in violation of Executive Order 11246, as amended, if a particular group is employed in a substantially disparate manner.

(j) The Contractor shall not use goals or affirmative action standards to discriminate against any person because of

race, color, religion, sex, or national origin.

(k) The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts under Executive Order 11246, as amended.

(l) The Contractor shall carry out such sanctions and penalties for violation of this clause and of the Equal Opportunity clause, including suspension, termination, and cancellation of existing subcontracts, as may be imposed or ordered under Executive Order 11246, as amended, and its implementing regulations, by the OFCCP. Any failure to carry out these sanctions and penalties as ordered shall be a violation of this clause and Executive Order 11246, as amended.

(m) The Contractor in fulfilling its obligations under this clause shall implement affirmative action procedures at least as extensive as those prescribed in paragraph (g) of this clause, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of Executive Order 11246, as amended, the implementing regulations, or this clause, the Deputy Assistant Secretary shall take action as prescribed in 41 CFR 60-4.8.

(n) The Contractor shall designate a responsible official to--

(1) Monitor all employment-related activity to ensure that the Contractor's equal employment policy is being carried out;

(2) Submit reports as may be required by the Government; and

(3) Keep records that shall at least include for each employee the name, address, telephone number, construction trade, union affiliation (if any), employee identification number, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, separate records are not required to be maintained.

Nothing contained herein shall be construed as a limitation upon the application of other laws that establish different standards of compliance or upon the requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

(End of clause)

52.222-35 AFFIRMATIVE ACTION FOR DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA (APR 1998)

(a)) Definitions. As used in this clause--

All employment openings includes all positions except executive and top management, those positions that will be filled from within the contractor's organization, and positions lasting 3 days or less. This term includes full-time employment, temporary employment of more than 3 days' duration, and part-time employment.

Appropriate office of the State employment service system means the local office of the Federal-State national system of public employment offices with assigned responsibility to serve the area where the employment opening is to be filled, including the District of Columbia, Guam, the Commonwealth of Puerto Rico, and the Virgin Islands.

Positions that will be filled from within the Contractor's organization means employment openings for which no consideration will be given to persons outside the Contractor's organization (including any affiliates, subsidiaries, and parent companies) and includes any openings that the Contractor proposes to fill from regularly established "recall" lists. The exception does not apply to a particular opening once an employer decides to consider applicants outside of its organization.

Veteran of the Vietnam era means a person who--

(1) Served on active duty for a period of more than 180 days, any part of which occurred between August 5, 1964, and May 7, 1975, and was discharged or released therefrom with other than a dishonorable discharge; or

(2) Was discharged or released from active duty for a service-connected disability if any part of such active duty was performed between August 5, 1964, and May 7, 1975.

(b) General. (1) Regarding any position for which the employee or applicant for employment is qualified, the Contractor shall not discriminate against the individual because the individual is a disabled veteran or a veteran of the Vietnam era. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified disabled veterans and veterans of the Vietnam era without discrimination based upon their disability or veterans' status in all employment practices such as--

(i) Employment;

(ii) Upgrading;

(iii) Demotion or transfer;

(iv) Recruitment;

(v) Advertising;

(vi) Layoff or termination;

(vii) Rates of pay or other forms of compensation; and

(viii) Selection for training, including apprenticeship.

(2) The Contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor (Secretary) issued under the Vietnam Era Veterans' Readjustment Assistance Act of 1972 (the Act), as amended.

(c) Listing openings. (1) The Contractor agrees to list all employment openings existing at contract award or occurring during contract performance, at an appropriate office of the State employment service system in the locality where the opening occurs. These openings include those occurring at any Contractor facility, including one not connected with performing this contract. An independent corporate affiliate is exempt from this requirement.

(2) State and local government agencies holding Federal contracts of \$10,000 or more shall also list all their employment openings with the appropriate office of the State employment service.

(3) The listing of employment openings with the State employment service system is required at least concurrently with using any other recruitment source or effort and involves the obligations of placing a bona fide job order,

including accepting referrals of veterans and nonveterans. This listing does not require hiring any particular job applicant or hiring from any particular group of job applicants and is not intended to relieve the Contractor from any requirements of Executive orders or regulations concerning nondiscrimination in employment.

(4) Whenever the Contractor becomes contractually bound to the listing terms of this clause, it shall advise the State employment service system, in each State where it has establishments, of the name and location of each hiring location in the State. As long as the Contractor is contractually bound to these terms and has so advised the State system, it need not advise the State system of subsequent contracts. The Contractor may advise the State system when it is no longer bound by this contract clause.

(d) Applicability. This clause does not apply to the listing of employment openings that occur and are filled outside the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, and the Virgin Islands.

(e) Postings. (1) The Contractor agrees to post employment notices stating (i) the Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era, and (ii) the rights of applicants and employees.

(2) These notices shall be posted in conspicuous places that are available to employees and applicants for employment. They shall be in a form prescribed by the Deputy Assistant Secretary for Federal Contract Compliance Programs, Department of Labor (Deputy Assistant Secretary), and provided by or through the Contracting Officer.

(3) The Contractor shall notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of the Act, and is committed to take affirmative action to employ, and advance in employment, qualified disabled veterans and veterans of the Vietnam Era.

(f) Noncompliance. If the Contractor does not comply with the requirements of this clause, appropriate actions may be taken under the rules, regulations, and relevant orders of the Secretary issued pursuant to the Act.

(g) Subcontracts. The Contractor shall include the terms of this clause in every subcontract or purchase order of \$10,000 or more unless exempted by rules, regulations, or orders of the Secretary. The Contractor shall act as specified by the Deputy Assistant Secretary to enforce the terms, including action for noncompliance.

(End of clause)

52.222-36 AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES (JUN 1998)

(a) General. (1) Regarding any position for which the employee or applicant for employment is qualified, the Contractor shall not discriminate against any employee or applicant because of physical or mental disability. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified individuals with disabilities without discrimination based upon their physical or mental disability in all employment practices such as--

(i) Recruitment, advertising, and job application procedures;

(ii) Hiring, upgrading, promotion, award of tenure, demotion, transfer, layoff, termination, right of return from layoff, and rehiring;

- (iii) Rates of pay or any other form of compensation and changes in compensation;
- (iv) Job assignments, job classifications, organizational structures, position descriptions, lines of progression, and seniority lists;
- (v) Leaves of absence, sick leave, or any other leave;
- (vi) Fringe benefits available by virtue of employment, whether or not administered by the Contractor;
- (vii) Selection and financial support for training, including apprenticeships, professional meetings, conferences, and other related activities, and selection for leaves of absence to pursue training;
- (viii) Activities sponsored by the Contractor, including social or recreational programs; and
- (ix) Any other term, condition, or privilege of employment.

(2) The Contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor (Secretary) issued under the Rehabilitation Act of 1973 (29 U.S.C. 793) (the Act), as amended.

(b) Postings. (1) The Contractor agrees to post employment notices stating--

(i) The Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified individuals with disabilities; and

(ii) The rights of applicants and employees.

(2) These notices shall be posted in conspicuous places that are available to employees and applicants for employment. The Contractor shall ensure that applicants and employees with disabilities are informed of the contents of the notice (e.g., the Contractor may have the notice read to a visually disabled individual, or may lower the posted notice so that it might be read by a person in a wheelchair). The notices shall be in a form prescribed by the Deputy Assistant Secretary for Federal Contract Compliance of the U.S. Department of Labor (Deputy Assistant Secretary) and shall be provided by or through the Contracting Officer.

(3) The Contractor shall notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of Section 503 of the Act and is committed to take affirmative action to employ, and advance in employment, qualified individuals with physical or mental disabilities.

(c) Noncompliance. If the Contractor does not comply with the requirements of this clause, appropriate actions may be taken under the rules, regulations, and relevant orders of the Secretary issued pursuant to the Act.

(d) Subcontracts. The Contractor shall include the terms of this clause in every subcontract or purchase order in excess of \$10,000 unless exempted by rules, regulations, or orders of the Secretary. The Contractor shall act as specified by the Deputy Assistant Secretary to enforce the terms, including action for noncompliance.

(End of clause)

52.222-37 EMPLOYMENT REPORTS ON DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA (JAN 1999)

(a) Unless the Contractor is a State or local government agency, the Contractor shall report at least annually, as required by the Secretary of Labor, on--

(1) The number of disabled veterans and the number of veterans of the Vietnam era in the workforce of the contractor by job category and hiring location; and

(2) The total number of new employees hired during the period covered by the report, and of that total, the number of disabled veterans, and the number of veterans of the Vietnam era.

(b) The above items shall be reported by completing the form entitled "Federal Contractor Veterans' Employment Report VETS-100."

(c) Reports shall be submitted no later than September 30 of each year beginning September 30, 1988.

(d) The employment activity report required by paragraph (a)(2) of this clause shall reflect total hires during the most recent 12-month period as of the ending date selected for the employment profile report required by paragraph (a)(1) of this clause. Contractors may select an ending date: (1) As of the end of any pay period during the period January through March 1st of the year the report is due, or (2) as of December 31, if the contractor has previous written approval from the Equal Employment Opportunity Commission to do so for purposes of submitting the Employer Information Report EEO-1 (Standard Form 100).

(e) The count of veterans reported according to paragraph (a) of this clause shall be based on voluntary disclosure. Each Contractor subject to the reporting requirements at 38 U.S.C. 4212 shall invite all disabled veterans and veterans of the Vietnam era who wish to benefit under the affirmative action program at 38 U.S.C. 4212 to identify themselves to the Contractor. The invitation shall state that the information is voluntarily provided; that the information will be kept confidential; that disclosure or refusal to provide the information will not subject the applicant or employee to any adverse treatment; and that the information will be used only in accordance with the regulations promulgated under 38 U.S.C. 4212.

(f) Subcontracts. The Contractor shall include the terms of this clause in every subcontract or purchase order of \$10,000 or more unless exempted by rules, regulations, or orders of the Secretary.

(End of clause)

52.223-5 POLLUTION PREVENTION AND RIGHT-TO-KNOW INFORMATION (APR 1998)

(a) Executive Order 12856 of August 3, 1993, requires Federal facilities to comply with the provisions of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA)(42 U.S.C. 11001-11050) and the Pollution Prevention Act of 1990 (PPA)(42 U.S.C. 13101-13109).

(b) The Contractor shall provide all information needed by the Federal facility to comply with the emergency planning reporting requirements of Section 302 of EPCRA; the emergency notice requirements of Section 304 of EPCRA; the list of Material Safety Data Sheets required by Section 311 of EPCRA; the emergency and hazardous chemical inventory forms of Section 312 of EPCRA; the toxic chemical release inventory of Section 313 of EPCRA, which includes the reduction and recycling information required by Section 6607 of PPA; and the toxic chemical reduction goals requirements of Section 3-302 of Executive Order 12856.

(End of clause)

52.223-6 DRUG-FREE WORKPLACE (MAY 2001)

(a) Definitions. As used in this clause --

"Controlled substance" means a controlled substance in schedules I through V of section 202 of the Controlled Substances Act (21 U.S.C. 812) and as further defined in regulation at 21 CFR 1308.11 - 1308.15.

"Conviction" means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes.

"Criminal drug statute" means a Federal or non-Federal criminal statute involving the manufacture, distribution, dispensing, possession, or use of any controlled substance.

"Drug-free workplace" means the site(s) for the performance of work done by the Contractor in connection with a specific contract at which employees of the Contractor are prohibited from engaging in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance.

"Employee" means an employee of a Contractor directly engaged in the performance of work under a Government contract. "Directly engaged" is defined to include all direct cost employees and any other Contractor employee who has other than a minimal impact or involvement in contract performance.

"Individual" means an offeror/contractor that has no more than one employee including the offeror/contractor.

(b) The Contractor, if other than an individual, shall-- within 30 days after award (unless a longer period is agreed to in writing for contracts of 30 days or more performance duration), or as soon as possible for contracts of less than 30 days performance duration--

(1) Publish a statement notifying its employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the Contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition;

(2) Establish an ongoing drug-free awareness program to inform such employees about--

(i) The dangers of drug abuse in the workplace;

(ii) The Contractor's policy of maintaining a drug-free workplace;

(iii) Any available drug counseling, rehabilitation, and employee assistance programs; and

- (iv) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
 - (3) Provide all employees engaged in performance of the contract with a copy of the statement required by subparagraph (b)(1) of this clause;
 - (4) Notify such employees in writing in the statement required by subparagraph (b)(1) of this clause that, as a condition of continued employment on this contract, the employee will--
 - (i) Abide by the terms of the statement; and
 - (ii) Notify the employer in writing of the employee's conviction under a criminal drug statute for a violation occurring in the workplace no later than 5 days after such conviction.
 - (5) Notify the Contracting Officer in writing within 10 days after receiving notice under subdivision (b)(4)(ii) of this clause, from an employee or otherwise receiving actual notice of such conviction. The notice shall include the position title of the employee;
 - (6) Within 30 days after receiving notice under subdivision (b)(4)(ii) of this clause of a conviction, take one of the following actions with respect to any employee who is convicted of a drug abuse violation occurring in the workplace:
 - (i) Taking appropriate personnel action against such employee, up to and including termination; or
 - (ii) Require such employee to satisfactorily participate in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency; and
 - (7) Make a good faith effort to maintain a drug-free workplace through implementation of subparagraphs (b)(1) through (b)(6) of this clause.
 - (c) The Contractor, if an individual, agrees by award of the contract or acceptance of a purchase order, not to engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance while performing this contract.
 - (d) In addition to other remedies available to the Government, the Contractor's failure to comply with the requirements of paragraph (b) or (c) of this clause may, pursuant to FAR 23.506, render the Contractor subject to suspension of contract payments, termination of the contract for default, and suspension or debarment.
- (End of clause)

52.223-14 *TOXIC CHEMICAL RELEASE REPORTING (OCT 2000)*

- (a) Unless otherwise exempt, the Contractor, as owner or operator of a facility used in the performance of this contract, shall file by July 1 for the prior calendar year an annual Toxic Chemical Release Inventory Form (Form R) as described in sections 313(a) and (g) of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11023(a) and (g)), and section 6607 of the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13106). The Contractor shall file, for each facility subject to the Form R filing and reporting requirements, the annual Form R throughout the life of the contract.

(b) A Contractor owned or operated facility used in the performance of this contract is exempt from the requirement to file an annual Form R if--

- (1) The facility does not manufacture, process, or otherwise use any toxic chemicals listed under section 313(c) of EPCRA, 42 U.S.C. 11023(c);
- (2) The facility does not have 10 or more full-time employees as specified in section 313(b)(1)(A) of EPCRA, 42 U.S.C. 11023(b)(1)(A);
- (3) The facility does not meet the reporting thresholds of toxic chemicals established under of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);
- (4) The facility does not fall within Standard Industrial Classification Code (SIC) major groups 20 through 39 or their corresponding North American Industry Classification System (NAICS) sectors 31 through 33; or
- (5) The facility is not located within any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Northern Mariana Islands, or any other territory or possession over which the United States has jurisdiction.

(c) If the Contractor has certified to an exemption in accordance with one or more of the criteria in paragraph (b) of this clause, and after award of the contract circumstances change so that any of its owned or operated facilities used in the performance of this contract is no longer exempt--

- (1) The Contractor shall notify the Contracting Officer; and
- (2) The Contractor, as owner or operator of a facility used in the performance of this contract that is no longer exempt, shall (i) submit a Toxic Chemical Release Inventory Form (Form R) on or before July 1 for the prior calendar year during which the facility becomes eligible; and (ii) continue to file the annual Form R for the life of the contract for such facility.
- (d) The Contracting Officer may terminate this contract or take other action as appropriate, if the Contractor fails to comply accurately and fully with the EPCRA and PPA toxic chemical release filing and reporting requirements.
- (e) Except for acquisitions of commercial items, as defined in FAR Part 2, the Contractor shall--
 - (1) For competitive subcontracts expected to exceed \$100,000 (including all options), include a solicitation provision substantially the same as the provision at FAR 52.223-13, Certification of Toxic Chemical Release Reporting; and
 - (2) Include in any resultant subcontract exceeding \$100,000 (including all options), the substance of this clause, except this paragraph (e).

(End of clause)

52.225-9 BUY AMERICAN ACT—CONSTRUCTION MATERIALS (MAY 2002)

(a) Definitions. As used in this clause--

Component means an article, material, or supply incorporated directly into a construction material.

Construction material means an article, material, or supply brought to the construction site by the Contractor or a subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, that are discrete systems incorporated into a public building or work and that are produced as complete systems, are evaluated as a single and distinct construction material regardless of when or how the individual parts or components of those systems are delivered to the construction site. Materials purchased directly by the Government are supplies, not construction material.

Cost of components means--

(1) For components purchased by the Contractor, the acquisition cost, including transportation costs to the place of incorporation into the construction material (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued); or

(2) For components manufactured by the Contractor, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (1) of this definition, plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the manufacture of the end product.

Domestic construction material means--

(1) An unmanufactured construction material mined or produced in the United States; or

(2) A construction material manufactured in the United States, if the cost of its components mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. Components of foreign origin of the same class or kind for which nonavailability determinations have been made are treated as domestic.

Foreign construction material means a construction material other than a domestic construction material.

United States means the 50 States and the District of Columbia, U.S. territories and possessions, Puerto Rico, the Northern Mariana Islands, and any other place subject to U.S. jurisdiction, but does not include leased bases.

(b) Domestic preference. (1) This clause implements the Buy American Act (41 U.S.C. 10a-10d) by providing a preference for domestic construction material. The Contractor shall use only domestic construction material in performing this contract, except as provided in paragraphs (b)(2) and (b)(3) of this clause.

(2) This requirement does not apply to the construction material or components listed by the Government as follows: none.

(3) The Contracting Officer may add other foreign construction material to the list in paragraph (b)(2) of this clause if the Government determines that

(i) The cost of domestic construction material would be unreasonable. The cost of a particular domestic construction material subject to the requirements of the Buy American Act is unreasonable when the cost of such material exceeds the cost of foreign material by more than 6 percent;

(ii) The application of the restriction of the Buy American Act to a particular construction material would be impracticable or inconsistent with the public interest; or

(iii) The construction material is not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality.

(c) Request for determination of inapplicability of the Buy American Act. (1)(i) Any Contractor request to use foreign construction material in accordance with paragraph (b)(3) of this clause shall include adequate information for Government evaluation of the request, including--

(A) A description of the foreign and domestic construction materials;

(B) Unit of measure;

(C) Quantity;

(D) Price;

(E) Time of delivery or availability;

(F) Location of the construction project;

(G) Name and address of the proposed supplier; and

(H) A detailed justification of the reason for use of foreign construction materials cited in accordance with paragraph (b)(3) of this clause.

(ii) A request based on unreasonable cost shall include a reasonable survey of the market and a completed price comparison table in the format in paragraph (d) of this clause.

(iii) The price of construction material shall include all delivery costs to the construction site and any applicable duty (whether or not a duty-free certificate may be issued).

(iv) Any Contractor request for a determination submitted after contract award shall explain why the Contractor could not reasonably foresee the need for such determination and could not have requested the determination before contract award. If the Contractor does not submit a satisfactory explanation, the Contracting Officer need not make a determination.

(2) If the Government determines after contract award that an exception to the Buy American Act applies and the Contracting Officer and the Contractor negotiate adequate consideration, the Contracting Officer will modify the contract to allow use of the foreign construction material. However, when the basis for the exception is the unreasonable price of a domestic construction material, adequate consideration is not less than the differential established in paragraph (b)(3)(i) of this clause.

(3) Unless the Government determines that an exception to the Buy American Act applies, use of foreign construction material is noncompliant with the Buy American Act.

(d) Data. To permit evaluation of requests under paragraph (c) of this clause based on unreasonable cost, the Contractor shall include the following information and any applicable supporting data based on the survey of suppliers:

Foreign and Domestic Construction Materials Price Comparison

Construction material description	Unit of measure	Quantity	Price (dollars) \1\
-----------------------------------	-----------------	----------	---------------------

Item 1

Foreign construction material.... ..
Domestic construction material... ..
Item 2
Foreign construction material.... ..
Domestic construction material... ..

Include all delivery costs to the construction site and any applicable duty (whether or not a duty-free entry certificate is issued).

List name, address, telephone number, and contact for suppliers surveyed. Attach copy of response; if oral, attach summary.

Include other applicable supporting information.

(End of clause)

52.225-13 *RESTRICTIONS ON CERTAIN FOREIGN PURCHASES (JUL 2000)*

(a) The Contractor shall not acquire, for use in the performance of this contract, any supplies or services originating from sources within, or that were located in or transported from or through, countries whose products are banned from importation into the United States under regulations of the Office of Foreign Assets Control, Department of the Treasury. Those countries are Cuba, Iran, Iraq, Libya, North Korea, Sudan, the territory of Afghanistan controlled by the Taliban, and Serbia (excluding the territory of Kosovo).

(b) The Contractor shall not acquire for use in the performance of this contract any supplies or services from entities controlled by the government of Iraq.

(c) The Contractor shall insert this clause, including this paragraph (c), in all subcontracts.

(End of clause)

52.226-1 *UTILIZATION OF INDIAN ORGANIZATIONS AND INDIAN-OWNED ECONOMIC ENTERPRISES (JUN 2000)*

(a) Definitions. As used in this clause:

"Indian" means any person who is a member of any Indian tribe, band, group, pueblo or community that is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs (BIA) in accordance with 25 U.S.C. 1452(c) and any "Native" as defined in the Alaska Native Claims Settlement Act (43 U.S.C. 1601).

"Indian organization" means the governing body of any Indian tribe or entity established or recognized by the governing body of an Indian tribe for the purposes of 25 U.S.C., chapter 17.

"Indian-owned economic enterprise" means any Indian-owned (as determined by the Secretary of the Interior) commercial, industrial, or business activity established or organized for the purpose of profit, provided that Indian ownership constitute a not less than 51 percent of the enterprise.

"Indian tribe" means any Indian tribe, band, group, pueblo or community, including native villages and native groups (including corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, that is recognized by the Federal Government as eligible for services from BIA in accordance with 25 U.S.C. 1542(c).

"Interested party" means a prime contractor or an actual or prospective offeror whose direct economic interest would be affected by the award of a subcontract or by the failure to award a subcontract.

(b) The Contractor shall use its best efforts to give Indian organizations and Indian-owned economic enterprises (25 U.S.C. 1544) the maximum practicable opportunity to participate in the subcontracts it awards to the fullest extent consistent with efficient performance of its contract.

(1) The Contracting Officer and the Contractor, acting in good faith, may rely on the representation of an Indian organization or Indian-owned economic enterprise as to its eligibility, unless an interested party challenges its status or the Contracting Officer has independent reason to question that status. In the event of a challenge to the representation of a subcontractor, the Contracting Officer will refer the matter to the U.S. Department of the Interior, Bureau of Indian Affairs (BIA), Attn: Chief, Division of Contracting and Grants Administration, 1849 C Street, NW., MS 2626-MIB, Washington, DC 20240-4000.

The BIA will determine the eligibility and notify the Contracting Officer. No incentive payment will be made within 50 working days of subcontract award or while a challenge is pending. If a subcontractor is determined to be an ineligible participant, no incentive payment will be made under the Indian Incentive Program.

(2) The Contractor may request an adjustment under the Indian Incentive Program to the following:

- (i) The estimated cost of a cost-type contract.
- (ii) The target cost of a cost-plus-incentive-fee prime contract.
- (iii) The target cost and ceiling price of a fixed-price incentive prime contract.
- (iv) The price of a firm-fixed-price prime contract.

(3) The amount of the adjustment to the prime contract is 5 percent of the estimated cost, target cost, or firm-fixed-price included in the subcontract initially awarded to the Indian organization or Indian-owned economic enterprise.

(4) The Contractor has the burden of proving the amount claimed and must assert its request for an adjustment prior to completion of contract performance.

(c) The Contracting Officer, subject to the terms and conditions of the contract and the availability of funds, will authorize an incentive payment of 5 percent of the amount paid to the subcontractor. The Contracting Officer will seek funding in accordance with agency procedures.

(End of clause)

52.227-1 AUTHORIZATION AND CONSENT (JUL 1995)

(a) The Government authorizes and consents to all use and manufacture, in performing this contract or any subcontract at any tier, of any invention described in and covered by a United States patent (1) embodied in the structure or composition of any article the delivery of which is accepted by the Government under this contract or (2) used in machinery, tools, or methods whose use necessarily results from compliance by the Contractor or a subcontractor with (i) specifications or written provisions forming a part of this contract or (ii) specific written instructions given by the Contracting Officer directing the manner of performance. The entire liability to the Government for infringement of a patent of the United States shall be determined solely by the provisions of the indemnity clause, if any, included in this contract or any subcontract hereunder (including any lower-tier subcontract), and the Government assumes liability for all other infringement to the extent of the authorization and consent hereinabove granted.

(b) The Contractor agrees to include, and require inclusion of, this clause, suitably modified to identify the parties, in all subcontracts at any tier for supplies or services (including construction, architect-engineer services, and materials, supplies, models, samples, and design or testing services expected to exceed the simplified acquisition threshold (however, omission of this clause from any subcontract, including those at or below the simplified acquisition threshold, does not affect this authorization and consent.)

(End of clause)

52.227-2 NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT (AUG 1996)

(a) The Contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this contract of which the Contractor has knowledge.

(b) In the event of any claim or suit against the Government on account of any alleged patent or copyright infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or services performed under this contract, the Contractor shall furnish to the Government, when requested by the Contracting Officer, all evidence and information in possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Government except where the Contractor has agreed to indemnify the Government.

(e) The Contractor agrees to include, and require inclusion of, this clause in all subcontracts at any tier for supplies or services (including construction and architect-engineer subcontracts and those for material, supplies, models, samples, or design or testing services) expected to exceed the simplified acquisition threshold at (FAR) 2.101 to exceed the dollar amount set forth in 13.000 of the Federal Acquisition Regulation (FAR).

(End of clause)

52.227-4 PATENT INDEMNITY--CONSTRUCTION CONTRACTS (APR 1984)

Except as otherwise provided, the Contractor agrees to indemnify the Government and its officers, agents, and employees against liability, including costs and expenses, for infringement upon any United States patent (except a patent issued upon an application that is now or may hereafter be withheld from issue pursuant to a Secrecy Order under 35 U.S.C. 181) arising out of performing this contract or out of the use or disposal by or for the account of the Government of supplies furnished or work performed under this contract.

(End of clause)

52.228-1 BID GUARANTEE (SEP 1996)

(a) Failure to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids, may be cause for rejection of the bid.

(b) The bidder shall furnish a bid guarantee in the form of a firm commitment, e.g., bid bond supported by good and sufficient surety or sureties acceptable to the Government, postal money order, certified check, cashier's check, irrevocable letter of credit, or, under Treasury Department regulations, certain bonds or notes of the United States. The Contracting Officer will return bid guarantees, other than bid bonds, (1) to unsuccessful bidders as soon as practicable after the opening of bids, and (2) to the successful bidder upon execution of contractual documents and bonds (including any necessary coinsurance or reinsurance agreements), as required by the bid as accepted.-

(c) The amount of the bid guarantee shall be 20 percent of the bid price or \$3,000,000, whichever is less.

(d) If the successful bidder, upon acceptance of its bid by the Government within the period specified for acceptance, fails to execute all contractual documents or furnish executed bond(s) within 10 days after receipt of the forms by the bidder, the Contracting Officer may terminate the contract for default.-

(e) In the event the contract is terminated for default, the bidder is liable for any cost of acquiring the work that exceeds the amount of its bid, and the bid guarantee is available to offset the difference.

(End of clause)

52.228-2 ADDITIONAL BOND SECURITY (OCT 1997)

The Contractor shall promptly furnish additional security required to protect the Government and persons supplying labor or materials under this contract if--

- (a) Any surety upon any bond, or issuing financial institution for other security, furnished with this contract becomes unacceptable to the Government.
- (b) Any surety fails to furnish reports on its financial condition as required by the Government;
- (c) The contract price is increased so that the penal sum of any bond becomes inadequate in the opinion of the Contracting Officer; or
- (d) An irrevocable letter of credit (ILC) used as security will expire before the end of the period of required security. If the Contractor does not furnish an acceptable extension or replacement ILC, or other acceptable substitute, at least 30 days before an ILC's scheduled expiration, the Contracting officer has the right to immediately draw on the ILC.

(End of clause)

52.228-11 PLEDGES OF ASSETS (FEB 1992)

(a) Offerors shall obtain from each person acting as an individual surety on a bid guarantee, a performance bond, or a payment bond--

(1) Pledge of assets; and

(2) Standard Form 28, Affidavit of Individual Surety.

(b) Pledges of assets from each person acting as an individual surety shall be in the form of--

(1) Evidence of an escrow account containing cash, certificates of deposit, commercial or Government securities, or other assets described in FAR 28.203-2 (except see 28.203-2(b)(2) with respect to Government securities held in book entry form) and/or;

(2) A recorded lien on real estate. The offeror will be required to provide--

(i) Evidence of title in the form of a certificate of title prepared by a title insurance company approved by the United States Department of Justice. This title evidence must show fee simple title vested in the surety along with any concurrent owners; whether any real estate taxes are due and payable; and any recorded encumbrances against the property, including the lien filed in favor of the Government as required by FAR 28.203-3(d);

(ii) Evidence of the amount due under any encumbrance shown in the evidence of title;

(iii) A copy of the current real estate tax assessment of the property or a current appraisal dated no earlier than 6 months prior to the date of the bond, prepared by a professional appraiser who certifies that the appraisal has been conducted in accordance with the generally accepted appraisal standards as reflected in the Uniform Standards of Professional Appraisal Practice, as promulgated by the Appraisal Foundation.

(End of clause)

52.228-14 IRREVOCABLE LETTER OF CREDIT (DEC 1999)

(a) "Irrevocable letter of credit" (ILC), as used in this clause, means a written commitment by a federally insured financial institution to pay all or part of a stated amount of money, until the expiration date of the letter, upon presentation by the Government (the beneficiary) of a written demand therefor. Neither the financial institution nor the offeror/Contractor can revoke or condition the letter of credit.

(b) If the offeror intends to use an ILC in lieu of a bid bond, or to secure other types of bonds such as performance and payment bonds, the letter of credit and letter of confirmation formats in paragraphs (e) and (f) of this clause shall be used.

(c) The letter of credit shall be irrevocable, shall require presentation of no document other than a written demand and the ILC (including confirming letter, if any), shall be issued/confirmed by an acceptable federally insured financial institution as provided in paragraph (d) of this clause, and--

(1) If used as a bid guarantee, the ILC shall expire no earlier than 60 days after the close of the bid acceptance period;

(2) If used as an alternative to corporate or individual sureties as security for a performance or payment bond, the offeror/Contractor may submit an ILC with an initial expiration date estimated to cover the entire period for which financial security is required or may submit an ILC with an initial expiration date that is a minimum period of one year from the date of issuance. The ILC shall provide that, unless the issuer provides the beneficiary written notice of non-renewal at least 60 days in advance of the current expiration date, the ILC is automatically extended without amendment for one year from the expiration date, or any future expiration date, until the period of required coverage is completed and the Contracting Officer provides the financial institution with a written statement waiving the right to payment. The period of required coverage shall be:

(i) For contracts subject to the Miller Act, the later of--

(A) One year following the expected date of final payment;

(B) For performance bonds only, until completion of any warranty period; or

(C) For payment bonds only, until resolution of all claims filed against the payment bond during the one-year period following final payment.

(ii) For contracts not subject to the Miller Act, the later of--

(A) 90 days following final payment; or

(B) For performance bonds only, until completion of any warranty period.

(d) Only federally insured financial institutions rated investment grade or higher shall issue or confirm the ILC. The offeror/Contractor shall provide the Contracting Officer a credit rating that indicates the financial institution has the required rating(s) as of the date of issuance of the ILC. Unless the financial institution issuing the ILC had letter of credit business of less than \$25 million in the past year, ILCs over \$5 million must be confirmed by another acceptable financial institution that had letter of credit business of less than \$25 million in the past year.

(e) The following format shall be used by the issuing financial institution to create an ILC:

[Issuing Financial Institution's Letterhead or Name and Address]

Issue Date _____

IRREVOCABLE LETTER OF CREDIT NO. _____

Account party's name _____

Account party's address _____

For Solicitation No. _____ (for reference only)

TO: [U.S. Government agency]

[U.S. Government agency's address]

1. We hereby establish this irrevocable and transferable Letter of Credit in your favor for one or more drawings up to United States \$_____. This Letter of Credit is payable at [issuing financial institution's and, if any, confirming financial institution's] office at [issuing financial institution's address and, if any, confirming financial institution's address] and expires with our close of business on _____, or any automatically extended expiration date.
2. We hereby undertake to honor your or the transferee's sight draft(s) drawn on the issuing or, if any, the confirming financial institution, for all or any part of this credit if presented with this Letter of Credit and confirmation, if any, at the office specified in paragraph 1 of this Letter of Credit on or before the expiration date or any automatically extended expiration date.
3. [This paragraph is omitted if used as a bid guarantee, and subsequent paragraphs are renumbered.] It is a condition of this Letter of Credit that it is deemed to be automatically extended without amendment for one year from the expiration date hereof, or any future expiration date, unless at least 60 days prior to any expiration date, we notify you or the transferee by registered mail, or other receipted means of delivery, that we elect not to consider this Letter of Credit renewed for any such additional period. At the time we notify you, we also agree to notify the account party (and confirming financial institution, if any) by the same means of delivery.
4. This Letter of Credit is transferable. Transfers and assignments of proceeds are to be effected without charge to either the beneficiary or the transferee/assignee of proceeds. Such transfer or assignment shall be only at the written direction of the Government (the beneficiary) in a form satisfactory to the issuing financial institution and the confirming financial institution, if any.
5. This Letter of Credit is subject to the Uniform Customs and Practice (UCP) for Documentary Credits, 1993 Revision, International Chamber of Commerce Publication No. 500, and to the extent not inconsistent therewith, to the laws of _____ [state of confirming financial institution, if any, otherwise state of issuing financial institution].
6. If this credit expires during an interruption of business of this financial institution as described in Article 17 of the UCP, the financial institution specifically agrees to effect payment if this credit is drawn against within 30 days after the resumption of our business.

Sincerely,

[Issuing financial institution]

(f) The following format shall be used by the financial institution to confirm an ILC:

[Confirming Financial Institution's Letterhead or Name and Address]

(Date) _____

Our Letter of Credit Advice Number _____

Beneficiary: _____ [U.S. Government agency]

Issuing Financial Institution: _____

Issuing Financial Institution's LC No.: _____

Gentlemen:

1. We hereby confirm the above indicated Letter of Credit, the original of which is attached, issued by _____ [name of issuing financial institution] for drawings of up to United States dollars _____/U.S. \$_____ and expiring with our close of business on _____ [the expiration date], or any automatically extended expiration date.

2. Draft(s) drawn under the Letter of Credit and this Confirmation are payable at our office located at _____.

3. We hereby undertake to honor sight draft(s) drawn under and presented with the Letter of Credit and this Confirmation at our offices as specified herein.

4. [This paragraph is omitted if used as a bid guarantee, and subsequent paragraphs are renumbered.] It is a condition of this confirmation that it be deemed automatically extended without amendment for one year from the expiration date hereof, or any automatically extended expiration date, unless:

(a) At least 60 days prior to any such expiration date, we shall notify the Contracting Officer, or the transferee and the issuing financial institution, by registered mail or other receipted means of delivery, that we elect not to consider this confirmation extended for any such additional period; or

(b) The issuing financial institution shall have exercised its right to notify you or the transferee, the account party, and ourselves, of its election not to extend the expiration date of the Letter of Credit.

5. This confirmation is subject to the Uniform Customs and Practice (UCP) for Documentary Credits, 1993 Revision, International Chamber of Commerce Publication No. 500, and to the extent not inconsistent therewith, to the laws of _____ [state of confirming financial institution].

6. If this confirmation expires during an interruption of business of this financial institution as described in Article 17 of the UCP, we specifically agree to effect payment if this credit is drawn against within 30 days after the resumption of our business.

Sincerely,

[Confirming financial institution]

(g) The following format shall be used by the Contracting Officer for a sight draft to draw on the Letter of Credit:

SIGHT DRAFT

[City, State]

(Date) _____

[Name and address of financial institution]

Pay to the order of _____ [Beneficiary Agency] _____ the sum of United States
\$ _____. This draft is drawn under Irrevocable Letter of Credit No.

_____.

[Beneficiary Agency]

By: _____

(End of clause)

52.228-15 PERFORMANCE AND PAYMENT BONDS-- CONSTRUCTION (JUL 2000)-

(a) Definitions. As used in this clause--

Original contract price means the award price of the contract; or, for requirements contracts, the price payable for the estimated total quantity; or, for indefinite-quantity contracts, the price payable for the specified minimum quantity. Original contract price does not include the price of any options, except those options exercised at the time of contract award.

(b) Amount of required bonds. Unless the resulting contract price is \$100,000 or less, the successful offeror shall furnish performance and payment bonds to the Contracting Officer as follows:

(1) Performance bonds (Standard Form 25). The penal amount of performance bonds at the time of contract award shall be 100 percent of the original contract price.

(2) Payment Bonds (Standard Form 25-A). The penal amount of payment bonds at the time of contract award shall be 100 percent of the original contract price.

(3) Additional bond protection. (i) The Government may require additional performance and payment bond protection if the contract price is increased. The increase in protection generally will equal 100 percent of the increase in contract price.

(ii) The Government may secure the additional protection by directing the Contractor to increase the penal amount of the existing bond or to obtain an additional bond.

(c) Furnishing executed bonds. The Contractor shall furnish all executed bonds, including any necessary reinsurance agreements, to the Contracting Officer, within the time period specified in the Bid Guarantee provision of the solicitation, or otherwise specified by the Contracting Officer, but in any event, before starting work.

(d) Surety or other security for bonds. The bonds shall be in the form of firm commitment, supported by corporate sureties whose names appear on the list contained in Treasury Department Circular 570, individual sureties, or by other acceptable security such as postal money order, certified check, cashier's check, irrevocable letter of credit, or, in accordance with Treasury Department regulations, certain bonds or notes of the United States. Treasury Circular 570 is published in the Federal Register or may be obtained from the U.S. Department of Treasury, Financial Management Service, Surety Bond Branch, 401 14th Street, NW, 2nd Floor, West Wing, Washington, DC 20227.

(e) Notice of subcontractor waiver of protection (40 U.S.C. 270b(c)). Any waiver of the right to sue on the payment bond is void unless it is in writing, signed by the person whose right is waived, and executed after such person has first furnished labor or material for use in the performance of the contract.

(End of clause)

52.228-4022 REQUIREMENT FOR BID GUARANTEE (FAR 28.101-2)

Each bidder shall submit with its bid a Bid Bond (Standard Form 24) with good and sufficient surety or sureties acceptable to the Government or other security as provided in the clause BID GUARANTEE in the form of twenty percent (20%) of the bid price or \$3,000,000 whichever is lesser. The bid bond penalty may be expressed in terms of a percentage of the bid price or may be expressed in dollars and cents.

52.229-3 FEDERAL, STATE, AND LOCAL TAXES (JAN 1991)

(a) "Contract date," as used in this clause, means the date set for bid opening or, if this is a negotiated contract or a modification, the effective date of this contract or modification.

"All applicable Federal, State, and local taxes and duties," as used in this clause, means all taxes and duties, in effect on the contract date, that the taxing authority is imposing and collecting on the transactions or property covered by this contract.

"After-imposed Federal tax," as used in this clause, means any new or increased Federal excise tax or duty, or tax that was exempted or excluded on the contract date but whose exemption was later revoked or reduced during the contract period, on the transactions or property covered by this contract that the Contractor is required to pay or

bear as the result of legislative, judicial, or administrative action taking effect after the contract date. It does not include social security tax or other employment taxes.

"After-relieved Federal tax," as used in this clause, means any amount of Federal excise tax or duty, except social security or other employment taxes, that would otherwise have been payable on the transactions or property covered by this contract, but which the Contractor is not required to pay or bear, or for which the Contractor obtains a refund or drawback, as the result of legislative, judicial, or administrative action taking effect after the contract date.

(b) The contract price includes all applicable Federal, State, and local taxes and duties.

(c) The contract price shall be increased by the amount of any after-imposed Federal tax, provided the Contractor warrants in writing that no amount for such newly imposed Federal excise tax or duty or rate increase was included in the contract price, as a contingency reserve or otherwise.

(d) The contract price shall be decreased by the amount of any after-relieved Federal tax.

(e) The contract price shall be decreased by the amount of any Federal excise tax or duty, except social security or other employment taxes, that the Contractor is required to pay or bear, or does not obtain a refund of, through the Contractor's fault, negligence, or failure to follow instructions of the Contracting Officer.

(f) No adjustment shall be made in the contract price under this clause unless the amount of the adjustment exceeds \$250.

(g) The Contractor shall promptly notify the Contracting Officer of all matters relating to any Federal excise tax or duty that reasonably may be expected to result in either an increase or decrease in the contract price and shall take appropriate action as the Contracting Officer directs.

(h) The Government shall, without liability, furnish evidence appropriate to establish exemption from any Federal, State, or local tax when the Contractor requests such evidence and a reasonable basis exists to sustain the exemption.

(End of clause)

52.229-5 TAXES--CONTRACTS PERFORMED IN U.S. POSSESSIONS OR PUERTO RICO (APR 1984)

The term "local taxes," as used in the Federal, State, and local taxes clause of this contract, includes taxes imposed by a possession of the United States or by Puerto Rico.

(End of clause)

52.232-5 PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS (MAY 1997)

(a) Payment of price. The Government shall pay the Contractor the contract price as provided in this contract.

(b) Progress payments. The Government shall make progress payments monthly as the work proceeds, or at more frequent intervals as determined by the Contracting Officer, on estimates of work accomplished which meets the standards of quality established under the contract, as approved by the Contracting Officer.

(1) The Contractor's request for progress payments shall include the following substantiation:

(i) An itemization of the amounts requested, related to the various elements of work required by the contract covered by the payment requested.

(ii) A listing of the amount included for work performed by each subcontractor under the contract.

(iii) A listing of the total amount of each subcontract under the contract.

(iv) A listing of the amounts previously paid to each such subcontractor under the contract.

(v) Additional supporting data in a form and detail required by the Contracting Officer.

(2) In the preparation of estimates, the Contracting Officer may authorize material delivered on the site and preparatory work done to be taken into consideration. Material delivered to the Contractor at locations other than the site also may be taken into consideration if--

(i) Consideration is specifically authorized by this contract; and

(ii) The Contractor furnishes satisfactory evidence that it has acquired title to such material and that the material will be used to perform this contract.

(c) Contractor certification. Along with each request for progress payments, the Contractor shall furnish the following certification, or payment shall not be made: (However, if the Contractor elects to delete paragraph (c)(4) from the certification, the certification is still acceptable.)

I hereby certify, to the best of my knowledge and belief, that--

(1) The amounts requested are only for performance in accordance with the specifications, terms, and conditions of the contract;

(2) Payments to subcontractors and suppliers have been made from previous payments received under the contract, and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with subcontract agreements and the requirements of chapter 39 of Title 31, United States Code;

(3) This request for progress payments does not include any amounts which the prime contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of the subcontract; and

(4) This certification is not to be construed as final acceptance of a subcontractor's performance.

(Name)

(Title)

(Date)

(d) Refund of unearned amounts. If the Contractor, after making a certified request for progress payments, discovers that a portion or all of such request constitutes a payment for performance by the Contractor that fails to conform to the specifications, terms, and conditions of this contract (hereinafter referred to as the "unearned amount"), the Contractor shall--

(1) Notify the Contracting Officer of such performance deficiency; and

(2) Be obligated to pay the Government an amount (computed by the Contracting Officer in the manner provided in paragraph (j) of this clause) equal to interest on the unearned amount from the 8th day after the date of receipt of the unearned amount until--

(i) The date the Contractor notifies the Contracting Officer that the performance deficiency has been corrected; or

(ii) The date the Contractor reduces the amount of any subsequent certified request for progress payments by an amount equal to the unearned amount.

(e) Retainage. If the Contracting Officer finds that satisfactory progress was achieved during any period for which a progress payment is to be made, the Contracting Officer shall authorize payment to be made in full. However, if satisfactory progress has not been made, the Contracting Officer may retain a maximum of 10 percent of the amount of the payment until satisfactory progress is achieved. When the work is substantially complete, the Contracting Officer may retain from previously withheld funds and future progress payments that amount the Contracting Officer considers adequate for protection of the Government and shall release to the Contractor all the remaining withheld funds. Also, on completion and acceptance of each separate building, public work, or other division of the contract, for which the price is stated separately in the contract, payment shall be made for the completed work without retention of a percentage.

(f) Title, liability, and reservation of rights. All material and work covered by progress payments made shall, at the time of payment, become the sole property of the Government, but this shall not be construed as--

(1) Relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work; or

(2) Waiving the right of the Government to require the fulfillment of all of the terms of the contract.

(g) Reimbursement for bond premiums. In making these progress payments, the Government shall, upon request, reimburse the Contractor for the amount of premiums paid for performance and payment bonds (including coinsurance and reinsurance agreements, when applicable) after the Contractor has furnished evidence of full payment to the surety. The retainage provisions in paragraph (e) of this clause shall not apply to that portion of progress payments attributable to bond premiums.

(h) Final payment. The Government shall pay the amount due the Contractor under this contract after--

(1) Completion and acceptance of all work;

(2) Presentation of a properly executed voucher; and

(3) Presentation of release of all claims against the Government arising by virtue of this contract, other than claims, in stated amounts, that the Contractor has specifically excepted from the operation of the release. A release may also be required of the assignee if the

Contractor's claim to amounts payable under this contract has been assigned under the Assignment of Claims Act of 1940 (31 U.S.C. 3727 and 41 U.S.C. 15).

(i) Limitation because of undefinitized work. Notwithstanding any provision of this contract, progress payments shall not exceed 80 percent on work accomplished on undefinitized contract actions. A "contract action" is any action resulting in a contract, as defined in FAR Subpart 2.1, including contract modifications for additional supplies or services, but not including contract modifications that are within the scope and under the terms of the contract, such as contract modifications issued pursuant to the Changes clause, or funding and other administrative changes.

(j) Interest computation on unearned amounts. In accordance with 31 U.S.C. 3903(c)(1), the amount payable under subparagraph (d)(2) of this clause shall be--

(1) Computed at the rate of average bond equivalent rates of 91-day Treasury bills auctioned at the most recent auction of such bills prior to the date the Contractor receives the unearned amount; and

(2) Deducted from the next available payment to the Contractor.

(End of clause)

52.232-17 INTEREST (JUNE 1996)

(a) Except as otherwise provided in this contract under a Price Reduction for Defective Cost or Pricing Data clause or a Cost Accounting Standards clause, all amounts that become payable by the Contractor to the Government under this contract (net of any applicable tax credit under the Internal Revenue Code (26 U.S.C. 1481)) shall bear simple interest from the date due until paid unless paid within 30 days of becoming due. The interest rate shall be the interest rate established by the Secretary of the Treasury as provided in Section 12 of the Contract Disputes Act of 1978 (Public Law 95-563), which is applicable to the period in which the amount becomes due, as provided in paragraph (b) of this clause, and then at the rate applicable for each six-month period as fixed by the Secretary until the amount is paid. reproduce, prepare derivative works, distribute copies to the public, and (b) Amounts shall be due at the earliest of the following dates:

(1) The date fixed under this contract.

(2) The date of the first written demand for payment consistent with this contract, including any demand resulting from a default termination.

(3) The date the Government transmits to the Contractor a proposed supplemental agreement to confirm completed negotiations establishing the amount of debt.

(4) If this contract provides for revision of prices, the date of written notice to the Contractor stating the amount of refund payable in connection with a pricing proposal or a negotiated pricing agreement not confirmed by contract modification.

(c) The interest charge made under this clause may be reduced under the procedures prescribed in 32.614-2 of the Federal Acquisition Regulation in effect on the date of this contract.

(End of clause)

52.232-23 ASSIGNMENT OF CLAIMS (JAN 1986) - ALTERNATE I (APR 1984)

(a) The Contractor, under the Assignment of Claims Act, as amended, 31 U.S.C. 3727, 41 U.S.C. 15 (hereafter referred to as "the Act"), may assign its rights to be paid amounts due or to become due as a result of the performance of this contract to a bank, trust company, or other financing institution, including any Federal lending agency. The assignee under such an assignment may thereafter further assign or reassign its right under the original assignment to any type of financing institution described in the preceding sentence. Unless otherwise stated in this contract, payments to an assignee of any amounts due or to become due under this contract shall not, to the extent specified in the Act, be subject to reduction or setoff.

(b) Any assignment or reassignment authorized under the Act and this clause shall cover all unpaid amounts payable under this contract, and shall not be made to more than one party, except that an assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in the financing of this contract.

(c) The Contractor shall not furnish or disclose to any assignee under this contract any classified document (including this contract) or information related to work under this contract until the Contracting Officer authorizes such action in writing.

(End of clause)

52.232-27 PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS (FEB 2002)

Notwithstanding any other payment terms in this contract, the Government will make invoice payments under the terms and conditions specified in this clause. The Government considers payment as being made on the day a check is dated or the date of an electronic funds transfer. Definitions of pertinent terms are set forth in sections 2.101, 32.001, and 32.902 of the Federal Acquisition Regulation. All days referred to in this clause are calendar days, unless otherwise specified. (However, see paragraph (a)(3) concerning payments due on Saturdays, Sundays, and legal holidays.)

(a) Invoice payments--(1) Types of invoice payments. For purposes of this clause, there are several types of invoice payments that may occur under this contract, as follows:

(i) Progress payments, if provided for elsewhere in this contract, based on Contracting Officer approval of the estimated amount and value of work or services performed, including payments for reaching milestones in any project.

(A) The due date for making such payments is 14 days after the designated billing office receives a proper payment request. If the designated billing office fails to annotate the payment request with the actual date of receipt at the time of receipt, the payment due date is the 14th day after the date of the Contractor's payment request, provided the designated billing office receives a proper payment request and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(B) The due date for payment of any amounts retained by the Contracting Officer in accordance with the clause at 52.232-5, Payments Under Fixed-Price Construction Contracts, is as specified in the contract or, if not specified, 30 days after approval by the Contracting Officer for release to the Contractor.

(ii) Final payments based on completion and acceptance of all work and presentation of release of all claims against the Government arising by virtue of the contract, and payments for partial deliveries that have been accepted by the Government (e.g., each separate building, public work, or other division of the contract for which the price is stated separately in the contract).

(A) The due date for making such payments is the later of the following two events:

(1) The 30th day after the designated billing office receives a proper invoice from the Contractor.

(2) The 30th day after Government acceptance of the work or services completed by the Contractor. For a final invoice when the payment amount is subject to contract settlement actions (e.g., release of claims), acceptance is deemed to occur on the effective date of the contract settlement.

(B) If the designated billing office fails to annotate the invoice with the date of actual receipt at the time of receipt, the invoice payment due date is the 30th day after the date of the Contractor's invoice, provided the designated billing office receives a proper invoice and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(2) Contractor's invoice. The Contractor shall prepare and submit invoices to the designated billing office specified in the contract. A proper invoice must include the items listed in paragraphs (a)(2)(i) through (a)(2)(xi) of this clause. If the invoice does not comply with these requirements, the designated billing office must return it within 7 days after receipt, with the reasons why it is not a proper invoice. When computing any interest penalty owed the Contractor, the Government will take into account if the Government notifies the Contractor of an improper invoice in an untimely manner.

(i) Name and address of the Contractor.

(ii) Invoice date and invoice number. (The Contractor should date invoices as close as possible to the date of mailing or transmission.)

(iii) Contract number or other authorization for work or services performed (including order number and contract line item number).

(iv) Description of work or services performed.

(v) Delivery and payment terms (e.g., discount for prompt payment terms).

(vi) Name and address of Contractor official to whom payment is to be sent (must be the same as that in the contract or in a proper notice of assignment).

(vii) Name (where practicable), title, phone number, and mailing address of person to notify in the event of a defective invoice.

(viii) For payments described in paragraph (a)(1)(i) of this clause, substantiation of the amounts requested and certification in accordance with the requirements of the clause at 52.232-5, Payments Under Fixed-Price Construction Contracts.

(ix) Taxpayer Identification Number (TIN). The Contractor shall include its TIN on the invoice only if required elsewhere in this contract.

(x) Electronic funds transfer (EFT) banking information.

(A) The Contractor shall include EFT banking information on the invoice only if required elsewhere in this contract.

(B) If EFT banking information is not required to be on the invoice, in order for the invoice to be a proper invoice, the Contractor shall have submitted correct EFT banking information in accordance with the applicable solicitation provision (e.g., 52.232-38, Submission of Electronic Funds Transfer Information with Offer), contract clause (e.g., 52.232-33, Payment by Electronic Funds Transfer--Central Contractor Registration, or 52.232-34, Payment by Electronic Funds Transfer--Other Than Central Contractor Registration), or applicable agency procedures.

(C) EFT banking information is not required if the Government waived the requirement to pay by EFT.

(xi) Any other information or documentation required by the contract.

(3) Interest penalty. The designated payment office will pay an interest penalty automatically, without request from the Contractor, if payment is not made by the due date and the conditions listed in paragraphs (a)(3)(i) through (a)(3)(iii) of this clause are met, if applicable. However, when the due date falls on a Saturday, Sunday, or legal holiday, the designated payment office may make payment on the following working day without incurring a late payment interest penalty.

(i) The designated billing office received a proper invoice.

(ii) The Government processed a receiving report or other Government documentation authorizing payment and there was no disagreement over quantity, quality, Contractor compliance with any contract term or condition, or requested progress payment amount.

(iii) In the case of a final invoice for any balance of funds due the Contractor for work or services performed, the amount was not subject to further contract settlement actions between the Government and the Contractor.

(4) Computing penalty amount. The Government will compute the interest penalty in accordance with the Office of Management and Budget prompt payment regulations at 5 CFR part 1315.

(i) For the sole purpose of computing an interest penalty that might be due the Contractor for payments described in paragraph (a)(1)(ii) of this clause, Government acceptance or approval is deemed to occur constructively on the 7th day after the Contractor has completed the work or services in accordance with the terms and conditions of the contract. If actual acceptance or approval occurs within the constructive acceptance or approval period, the Government will base the determination of an interest penalty on the actual date of acceptance or approval. Constructive acceptance or constructive approval requirements do not apply if there is a disagreement over quantity, quality, or Contractor compliance with a contract provision. These requirements also do not compel Government officials to accept work or services, approve Contractor estimates, perform contract administration functions, or make payment prior to fulfilling their responsibilities.

(ii) The prompt payment regulations at 5 CFR 1315.10(c) do not require the Government to pay interest penalties if payment delays are due to disagreement between the Government and the Contractor over the payment amount or other issues involving contract compliance, or on amounts temporarily withheld or retained in accordance with the terms of the contract. The Government and the Contractor shall resolve claims involving disputes, and any interest that may be payable in accordance with the clause at FAR 52.233-1, Disputes.

(5) Discounts for prompt payment. The designated payment office will pay an interest penalty automatically, without request from the Contractor, if the Government takes a discount for prompt payment improperly. The Government will calculate the interest penalty in accordance with the prompt payment regulations at 5 CFR part 1315.

(6) Additional interest penalty. (i) The designated payment office will pay a penalty amount, calculated in accordance with the prompt payment regulations at 5 CFR part 1315 in addition to the interest penalty amount only if--

(A) The Government owes an interest penalty of \$1 or more;

(B) The designated payment office does not pay the interest penalty within 10 days after the date the invoice amount is paid; and

(C) The Contractor makes a written demand to the designated payment office for additional penalty payment, in accordance with paragraph (a)(6)(ii) of this clause, postmarked not later than 40 days after the date the invoice amount is paid.

(ii)(A) The Contractor shall support written demands for additional penalty payments with the following data. The Government will not request any additional data. The Contractor shall--

(1) Specifically assert that late payment interest is due under a specific invoice, and request payment of all overdue late payment interest penalty and such additional penalty as may be required;

(2) Attach a copy of the invoice on which the unpaid late payment interest was due; and

(3) State that payment of the principal has been received, including the date of receipt.

(B) If there is no postmark or the postmark is illegible--

(1) The designated payment office that receives the demand will annotate it with the date of receipt provided the demand is received on or before the 40th day after payment was made; or

(2) If the designated payment office fails to make the required annotation, the Government will determine the demand's validity based on the date the Contractor has placed on the demand, provided such date is no later than the 40th day after payment was made.

(b) Contract financing payments. If this contract provides for contract financing, the Government will make contract financing payments in accordance with the applicable contract financing clause.

(c) Subcontract clause requirements. The Contractor shall include in each subcontract for property or services (including a material supplier) for the purpose of performing this contract the following:

(1) Prompt payment for subcontractors. A payment clause that obligates the Contractor to pay the subcontractor for satisfactory performance under its subcontract not later than 7 days from receipt of payment out of such amounts as are paid to the Contractor under this contract.

(2) Interest for subcontractors. An interest penalty clause that obligates the Contractor to pay to the subcontractor an interest penalty for each payment not made in accordance with the payment clause--

(i) For the period beginning on the day after the required payment date and ending on the date on which payment of the amount due is made; and

(ii) Computed at the rate of interest established by the Secretary of the Treasury, and published in the Federal Register, for interest payments under section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611) in effect at the time the Contractor accrues the obligation to pay an interest penalty.

(3) Subcontractor clause flowdown. A clause requiring each subcontractor to use:

(i) Include a payment clause and an interest penalty clause conforming to the standards set forth in paragraphs (c)(1) and (c)(2) of this clause in each of its subcontracts; and

(ii) Require each of its subcontractors to include such clauses in their subcontracts with each lower-tier subcontractor or supplier.

(d) Subcontract clause interpretation. The clauses required by paragraph (c) of this clause shall not be construed to impair the right of the Contractor or a subcontractor at any tier to negotiate, and to include in their subcontract, provisions that--

(1) Retainage permitted. Permit the Contractor or a subcontractor to retain (without cause) a specified percentage of each progress payment otherwise due to a subcontractor for satisfactory performance under the subcontract without incurring any obligation to pay a late payment interest penalty, in accordance with terms and conditions agreed to by the parties to the subcontract, giving such recognition as the parties deem appropriate to the ability of a subcontractor to furnish a performance bond and a payment bond;

(2) Withholding permitted. Permit the Contractor or subcontractor to make a determination that part or all of the subcontractor's request for payment may be withheld in accordance with the subcontract agreement; and

(3) Withholding requirements. Permit such withholding without incurring any obligation to pay a late payment penalty if--

(i) A notice conforming to the standards of paragraph (g) of this clause previously has been furnished to the subcontractor; and

(ii) The Contractor furnishes to the Contracting Officer a copy of any notice issued by a Contractor pursuant to paragraph (d)(3)(i) of this clause.

(e) Subcontractor withholding procedures. If a Contractor, after making a request for payment to the Government but before making a payment to a subcontractor for the subcontractor's performance covered by the payment request, discovers that all or a portion of the payment otherwise due such subcontractor is subject to withholding from the subcontractor in accordance with the subcontract agreement, then the Contractor shall--

(1) Subcontractor notice. Furnish to the subcontractor a notice conforming to the standards of paragraph (g) of this clause as soon as practicable upon ascertaining the cause giving rise to a withholding, but prior to the due date for subcontractor payment;

(2) Contracting Officer notice. Furnish to the Contracting Officer, as soon as practicable, a copy of the notice furnished to the subcontractor pursuant to paragraph (e)(1) of this clause;

(3) Subcontractor progress payment reduction. Reduce the subcontractor's progress payment by an amount not to exceed the amount specified in the notice of withholding furnished under paragraph (e)(1) of this clause;

(4) Subsequent subcontractor payment. Pay the subcontractor as soon as practicable after the correction of the identified subcontract performance deficiency, and--

(i) Make such payment within--

(A) Seven days after correction of the identified subcontract performance deficiency (unless the funds therefor must be recovered from the Government because of a reduction under paragraph (e)(5)(i)) of this clause; or

(B) Seven days after the Contractor recovers such funds from the Government; or

(ii) Incur an obligation to pay a late payment interest penalty computed at the rate of interest established by the Secretary of the Treasury, and published in the Federal Register, for interest payments under section 12 of the Contracts Disputes Act of 1978 (41 U.S.C. 611) in effect at the time the Contractor accrues the obligation to pay an interest penalty;

(5) Notice to Contracting Officer. Notify the Contracting Officer upon--

(i) Reduction of the amount of any subsequent certified application for payment; or

(ii) Payment to the subcontractor of any withheld amounts of a progress payment, specifying--

(A) The amounts withheld under paragraph (e)(1) of this clause; and

(B) The dates that such withholding began and ended; and

(6) Interest to Government. Be obligated to pay to the Government an amount equal to interest on the withheld payments (computed in the manner provided in 31 U.S.C. 3903(c)(1)), from the 8th day after receipt of the withheld amounts from the Government until--

(i) The day the identified subcontractor performance deficiency is corrected; or

(ii) The date that any subsequent payment is reduced under paragraph (e)(5)(i) of this clause.

(f) Third-party deficiency reports--(1) Withholding from subcontractor. If a Contractor, after making payment to a first-tier subcontractor, receives from a supplier or subcontractor of the first-tier subcontractor (hereafter referred to as a "second-tier subcontractor") a written notice in accordance with section 2 of the Act of August 24, 1935 (40 U.S.C. 270b, Miller Act), asserting a deficiency in such first-tier subcontractor's performance under the contract for which the Contractor may be ultimately liable, and the Contractor determines that all or a portion of future payments otherwise due such first-tier subcontractor is subject to withholding in accordance with the subcontract agreement, the Contractor may, without incurring an obligation to pay an interest penalty under paragraph (e)(6) of this clause--

(i) Furnish to the first-tier subcontractor a notice conforming to the standards of paragraph (g) of this clause as soon as practicable upon making such determination; and

(ii) Withhold from the first-tier subcontractor's next available progress payment or payments an amount not to exceed the amount specified in the notice of withholding furnished under paragraph (f)(1)(i) of this clause.

(2) Subsequent payment or interest charge. As soon as practicable, but not later than 7 days after receipt of satisfactory written notification that the identified subcontract performance deficiency has been corrected, the Contractor shall--

(i) Pay the amount withheld under paragraph (f)(1)(ii) of this clause to such first-tier subcontractor; or

(ii) Incur an obligation to pay a late payment interest penalty to such first-tier subcontractor computed at the rate of interest established by the Secretary of the Treasury, and published in the Federal Register, for interest payments under section 12 of the Contracts Disputes Act of 1978 (41 U.S.C. 611) in effect at the time the Contractor accrues the obligation to pay an interest penalty.

(g) Written notice of subcontractor withholding. The Contractor shall issue a written notice of any withholding to a subcontractor (with a copy furnished to the Contracting Officer), specifying--

(1) The amount to be withheld;

(2) The specific causes for the withholding under the terms of the subcontract; and

(3) The remedial actions to be taken by the subcontractor in order to receive payment of the amounts withheld.

(h) Subcontractor payment entitlement. The Contractor may not request payment from the Government of any amount withheld or retained in accordance with paragraph (d) of this clause until such time as the Contractor has determined and certified to the Contracting Officer that the subcontractor is entitled to the payment of such amount.

(i) Prime-subcontractor disputes. A dispute between the Contractor and subcontractor relating to the amount or entitlement of a subcontractor to a payment or a late payment interest penalty under a clause included in the subcontract pursuant to paragraph (c) of this clause does not constitute a dispute to which the Government is a party. The Government may not be interpleaded in any judicial or administrative proceeding involving such a dispute.

(j) Preservation of prime-subcontractor rights. Except as provided in paragraph (i) of this clause, this clause shall not limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or a subcontractor in the event of a dispute involving late payment or nonpayment by the Contractor or deficient subcontract performance or nonperformance by a subcontractor.

(k) Non-recourse for prime contractor interest penalty. The Contractor's obligation to pay an interest penalty to a subcontractor pursuant to the clauses included in a subcontract under paragraph (c) of this clause shall not be construed to be an obligation of the Government for such interest penalty. A cost-reimbursement claim may not include any amount for reimbursement of such interest penalty.

(l) Overpayments. If the Contractor becomes aware of a duplicate payment or that the Government has otherwise overpaid on an invoice payment, the Contractor shall immediately notify the Contracting Officer and request instructions for disposition of the overpayment.

(End of clause)

52.232-33 PAYMENT BY ELECTRONIC FUNDS TRANSFER— CENTRAL CONTRACTOR REGISTRATION (MAY 1999)

(a) Method of payment. (1) All payments by the Government under this contract shall be made by electronic funds transfer (EFT), except as provided in paragraph (a)(2) of this clause. As used in this clause, the term "EFT" refers to the funds transfer and may also include the payment information transfer.

(2) In the event the Government is unable to release one or more payments by EFT, the Contractor agrees to either--

(i) Accept payment by check or some other mutually agreeable method of payment; or

(ii) Request the Government to extend the payment due date until such time as the Government can make payment by EFT (but see paragraph (d) of this clause).

(b) Contractor's EFT information. The Government shall make payment to the Contractor using the EFT information contained in the Central Contractor Registration (CCR) database. In the event that the EFT information changes, the Contractor shall be responsible for providing the updated information to the CCR database.

(c) Mechanisms for EFT payment. The Government may make payment by EFT through either the Automated Clearing House (ACH) network, subject to the rules of the National Automated Clearing House Association, or the Fedwire Transfer System. The rules governing Federal payments through the ACH are contained in 31 CFR part 210.

(d) Suspension of payment. If the Contractor's EFT information in the CCR database is incorrect, then the Government need not make payment to the Contractor under this contract until correct EFT information is entered into the CCR database; and any invoice or contract financing request shall be deemed not to be a proper invoice for the purpose of prompt payment under this contract. The prompt payment terms of the contract regarding notice of an improper invoice and delays in accrual of interest penalties apply.

(e) Contractor EFT arrangements. If the Contractor has identified multiple payment receiving points (i.e., more than one remittance address and/or EFT information set) in the CCR database, and the Contractor has not notified the Government of the payment receiving point applicable to this contract, the Government shall make payment to the first payment receiving point (EFT information set or remittance address as applicable) listed in the CCR database.

(f) Liability for uncompleted or erroneous transfers. (1) If an uncompleted or erroneous transfer occurs because the Government used the Contractor's EFT information incorrectly, the Government remains responsible for--

(i) Making a correct payment;

(ii) Paying any prompt payment penalty due; and

(iii) Recovering any erroneously directed funds.

(2) If an uncompleted or erroneous transfer occurs because the Contractor's EFT information was incorrect, or was revised within 30 days of Government release of the EFT payment transaction instruction to the Federal Reserve System, and--

(i) If the funds are no longer under the control of the payment office, the Government is deemed to have made payment and the Contractor is responsible for recovery of any erroneously directed funds; or

(ii) If the funds remain under the control of the payment office, the Government shall not make payment, and the provisions of paragraph (d) of this clause shall apply.

(g) EFT and prompt payment. A payment shall be deemed to have been made in a timely manner in accordance with the prompt payment terms of this contract if, in the EFT payment transaction instruction released to the Federal Reserve System, the date specified for settlement of the payment is on or before the prompt payment due date, provided the specified payment date is a valid date under the rules of the Federal Reserve System.

(h) EFT and assignment of claims. If the Contractor assigns the proceeds of this contract as provided for in the assignment of claims terms of this contract, the Contractor shall require as a condition of any such assignment, that the assignee shall register in the CCR database and shall be paid by EFT in accordance with the terms of this clause. In all respects, the requirements of this clause shall apply to the assignee as if it were the Contractor. EFT information that shows the ultimate recipient of the transfer to be other than the Contractor, in the absence of a proper assignment of claims acceptable to the Government, is incorrect EFT information within the meaning of paragraph (d) of this clause.

(i) Liability for change of EFT information by financial agent. The Government is not liable for errors resulting from changes to EFT information made by the Contractor's financial agent.

(j) Payment information. The payment or disbursing office shall forward to the Contractor available payment information that is suitable for transmission as of the date of release of the EFT instruction to the Federal Reserve System. The Government may request the Contractor to designate a desired format and method(s) for delivery of payment information from a list of formats and methods the payment office is capable of executing. However, the Government does not guarantee that any particular format or method of delivery is available at any particular payment office and retains the latitude to use the format and delivery method most convenient to the Government. If the Government makes payment by check in accordance with paragraph (a) of this clause, the Government shall mail the payment information to the remittance address contained in the CCR database.

(End of Clause)

52.232-35 DESIGNATION OF OFFICE FOR GOVERNMENT RECEIPT OF ELECTRONIC FUNDS TRANSFER INFORMATION (MAY 1999)

(a) As provided in paragraph (b) of the clause at 52.232-34, Payment by Electronic Funds Transfer--Other than Central Contractor Registration, the Government has designated the office cited in paragraph (c) of this clause as the office to receive the Contractor's electronic funds transfer (EFT) information, in lieu of the payment office of this contract.

(b) The Contractor shall send all EFT information, and any changes to EFT information to the office designated in paragraph (c) of this clause. The Contractor shall not send EFT information to the payment office, or any other office than that designated in paragraph (c). The Government need not use any EFT information sent to any office other than that designated in paragraph (c).

(c) Designated Office:

Name: U.S. Army Corps of Engineers
St. Paul District
190 East Fifth Street
St. Paul, Minnesota 55101-1638

Telephone Number: 651-290-5233

Person to Contact: Mr. Wayne Sheffel, CEMVP-RM-F

Electronic Address: wayne.sheffel@usace.army.mil

(End of clause)

52.233-1 DISPUTES. (DEC 1998)

(a) This contract is subject to the Contract Disputes Act of 1978, as amended (41 U.S.C. 601-613).

(b) Except as provided in the Act, all disputes arising under or relating to this contract shall be resolved under this clause.

(c) "Claim," as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to this contract. A claim arising under a contract, unlike a claim relating to that contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant. However, a written demand or written assertion by the Contractor seeking the payment of money exceeding \$100,000 is not a claim under the Act until certified as required by subparagraph (d)(2) of this clause. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim under the Act. The submission may be converted to a claim under the Act, by complying with the submission and certification requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.

(d)(1) A claim by the Contractor shall be made in writing and, unless otherwise stated in this contract, submitted within 6 years after accrual of the claim to the Contracting Officer for a written decision. A claim by the Government against the Contractor shall be subject to a written decision by the Contracting Officer.

(2)(i) The contractors shall provide the certification specified in subparagraph (d)(2)(iii) of this clause when submitting any claim -

(A) Exceeding \$100,000; or

(B) Regardless of the amount claimed, when using -

(1) Arbitration conducted pursuant to 5 U.S.C. 575-580; or

(2) Any other alternative means of dispute resolution (ADR) technique that the agency elects to handle in accordance with the Administrative Dispute Resolution Act (ADRA).

(ii) The certification requirement does not apply to issues in controversy that have not been submitted as all or part of a claim.

(iii) The certification shall state as follows: "I certify that the claim is made in good faith; that the supporting data are accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the contract adjustment for which the Contractor believes the Government is liable; and that I am duly authorized to certify the claim on behalf of the Contractor.

(3) The certification may be executed by any person duly authorized to bind the Contractor with respect to the claim.

(e) For Contractor claims of \$100,000 or less, the Contracting Officer must, if requested in writing by the Contractor, render a decision within 60 days of the request. For Contractor-certified claims over \$100,000, the Contracting Officer must, within 60 days, decide the claim or notify the Contractor of the date by which the decision will be made.

(f) The Contracting Officer's decision shall be final unless the Contractor appeals or files a suit as provided in the Act.

(g) If the claim by the Contractor is submitted to the Contracting Officer or a claim by the Government is presented to the Contractor, the parties, by mutual consent, may agree to use alternative dispute resolution (ADR). If the Contractor refuses an offer for ADR, the Contractor shall inform the Contracting Officer, in writing, of the Contractor's specific reasons for rejecting the request.

(h) The Government shall pay interest on the amount found due and unpaid from (1) the date the Contracting Officer receives the claim (certified, if required); or (2) the date that payment otherwise would be due, if that date is later, until the date of payment. With regard to claims having defective certifications, as defined in (FAR) 48 CFR 33.201, interest shall be paid from the date that the Contracting Officer initially receives the claim. Simple interest on claims shall be paid at the rate, fixed by the Secretary of the Treasury as provided in the Act, which is applicable to the period during which the Contracting Officer receives the claim and then at the rate applicable for each 6-month period as fixed by the Treasury Secretary during the pendency of the claim.

(i) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under the contract, and comply with any decision of the Contracting Officer.

(End of clause)

52.233-3 *PROTEST AFTER AWARD (AUG. 1996)*

(a) Upon receipt of a notice of protest (as defined in FAR 33.101) or a determination that a protest is likely (see FAR 33.102(d)), the Contracting Officer may, by written order to the Contractor, direct the Contractor to stop performance of the work called for by this contract. The order shall be specifically identified as a stop-work order issued under this clause. Upon receipt of the order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage. Upon receipt of the final decision in the protest, the Contracting Officer shall either--

(1) Cancel the stop-work order; or

(2) Terminate the work covered by the order as provided in the Default, or the Termination for Convenience of the Government, clause of this contract.

(b) If a stop-work order issued under this clause is canceled either before or after a final decision in the protest, the Contractor shall resume work. The Contracting Officer shall make an equitable adjustment in the delivery schedule or contract price, or both, and the contract shall be modified, in writing, accordingly, if--

(1) The stop-work order results in an increase in the time required for, or in the Contractor's cost properly allocable to, the performance of any part of this contract; and

(2) The Contractor asserts its right to an adjustment within 30 days after the end of the period of work stoppage; provided, that if the Contracting Officer decides the facts justify the action, the Contracting Officer may receive and act upon a proposal at any time before final payment under this contract.

(c) If a stop-work order is not canceled and the work covered by the order is terminated for the convenience of the Government, the Contracting Officer shall allow reasonable costs resulting from the stop-work order in arriving at the termination settlement.

(d) If a stop-work order is not canceled and the work covered by the order is terminated for default, the Contracting Officer shall allow, by equitable adjustment or otherwise, reasonable costs resulting from the stop-work order.

(e) The Government's rights to terminate this contract at any time are not affected by action taken under this clause.

(f) If, as the result of the Contractor's intentional or negligent misstatement, misrepresentation, or miscertification, a protest related to this contract is sustained, and the Government pays costs, as provided in FAR 33.102(b)(2) or 33.104(h)(1), the Government may require the Contractor to reimburse the Government the amount of such costs. In addition to any other remedy available, and pursuant to the requirements of Subpart 32.6, the Government may collect this debt by offsetting the amount against any payment due the Contractor under any contract between the Contractor and the Government.

(End of clause)

52.236-1 PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984)

The Contractor shall perform on the site, and with its own organization, work equivalent to at least twenty (20) percent of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

(End of clause)

52.236-2 DIFFERING SITE CONDITIONS (APR 1984)

As prescribed in 36.502, insert the following clause in solicitations and contracts when a fixed-price construction contract or a fixed-price dismantling, demolition, or removal of improvements contract is contemplated and the contract amount is expected to exceed the small purchase limitation. The Contracting Officer may insert the clause in solicitations and contracts when a fixed-price construction or a fixed-price contract for dismantling, demolition, or removal of improvements is contemplated and the contract amount is expected to be within the small purchase limitation.

(a) The Contractor shall promptly, and before the conditions are disturbed, give a written notice to the Contracting Officer of

(1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or

(2) unknown physical conditions at the site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract.

(b) The Contracting Officer shall investigate the site conditions promptly after receiving the notice. If the conditions

do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performing any part of the work under this contract, whether or not changed as a result of the conditions, an equitable adjustment shall be made under this clause and the contract modified in writing accordingly.

(c) No request by the Contractor for an equitable adjustment to the contract under this clause shall be allowed, unless the Contractor has given the written notice required; provided, that the time prescribed in (a) above for giving written notice may be extended by the Contracting Officer.

(d) No request by the Contractor for an equitable adjustment to the contract for differing site conditions shall be allowed if made after final payment under this contract.

(End of clause)

52.236-3 SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK (APR 1984)

(a) The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to

(1) conditions bearing upon transportation, disposal, handling, and storage of materials;

(2) the availability of labor, water, electric power, and roads;

(3) uncertainties of weather, river stages, tides, or similar physical conditions at the site;

(4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Government, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the Government.

(b) The Government assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the Government. Nor does the Government assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless that understanding or representation is expressly stated in this contract.

(End of clause)

52.236-4 *PHYSICAL DATA (APR 1984)*

Data and information furnished or referred to below is for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

(a) The indications of physical conditions on the drawings and in the specifications are the result of site investigations by results of surveys, soil borings and soil testing (both in the fields and in the laboratory) noted on the boring logs, record drawings, photograph and site visits. Graphic logs of borings located within the area of work under this contract are shown on the drawings. The borings are representative of subsurface conditions at their respective locations and for their respective reaches. Variations in the stratigraphy and characteristics of the soil and rock are known to occur between borings. Normal variations in site geology will not be considered as differing materially within the purview of Contract Clause FAR 52.236-3, Differing Site Conditions. Ground water elevations measured in borings are not constant and will fluctuate.

(b) Weather conditions: Before submitting a bid, bidders should satisfy themselves as to the potential hazards from weather conditions. Complete weather records and reports may be obtained from the local US Weather Service.

(c) Transportation facilities: Before Submitting a bid bidder should obtain necessary data as to access of highway and railroad facilities. The unavailability of transportation facilities shall not become a basis for claims for damages or time extensions to complete the work.

(d) River Conditions: Hydrographs of the river stages are indicated on the drawings. These hydrographs include historic water levels and/or flows at the gauging stations. The contractor has the responsibility to schedule its operations to take advantage the most favorable river stages.

(End of clause)

52.236-5 *MATERIAL AND WORKMANSHIP (APR 1984)*

(a) All equipment, material, and articles incorporated into the work covered by this contract shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in this contract. References in the specifications to equipment, material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may, at its option, use any equipment, material, article, or process that, in the judgment of the Contracting Officer, is equal to that named in the specifications, unless otherwise specifically provided in this contract.

(b) The Contractor shall obtain the Contracting Officer's approval of the machinery and mechanical and other equipment to be incorporated into the work. When requesting approval, the Contractor shall furnish to the Contracting Officer the name of the manufacturer, the model number, and other information concerning the performance, capacity, nature, and rating of the machinery and mechanical and other equipment. When required by this contract or by the Contracting Officer, the Contractor shall also obtain the Contracting Officer's approval of the material or articles which the Contractor contemplates incorporating into the work. When requesting approval, the

Contractor shall provide full information concerning the material or articles. When directed to do so, the Contractor shall submit samples for approval at the Contractor's expense, with all shipping charges prepaid. Machinery, equipment, material, and articles that do not have the required approval shall be installed or used at the risk of subsequent rejection.

(c) All work under this contract shall be performed in a skillful and workmanlike manner. The Contracting Officer may require, in writing, that the Contractor remove from the work any employee the Contracting Officer deems incompetent, careless, or otherwise objectionable.

(End of clause)

52.236-6 SUPERINTENDENCE BY THE CONTRACTOR (APR 1984)

At all times during performance of this contract and until the work is completed and accepted, the Contractor shall directly superintend the work or assign and have on the worksite a competent superintendent who is satisfactory to the Contracting Officer and has authority to act for the Contractor.

(End of clause)

52.236-7 PERMITS AND RESPONSIBILITIES (NOV 1991)

The Contractor shall, without additional expense to the Government, be responsible for obtaining any necessary licenses and permits, and for complying with any Federal, State, and municipal laws, codes, and regulations applicable to the performance of the work. The Contractor shall also be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract.

(End of clause)

52.236-8 OTHER CONTRACTS (APR 1984)

The Government may undertake or award other contracts for additional work at or near the site of the work under this contract. The Contractor shall fully cooperate with the other contractors and with Government employees and shall carefully adapt scheduling and performing the work under this contract to accommodate the additional work, heeding any direction that may be provided by the Contracting Officer. The Contractor shall not commit or permit any act that will interfere with the performance of work by any other contractor or by Government employees.

(End of clause)

52.236-9 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS (APR 1984)

(a) The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.

(b) The Contractor shall protect from damage all existing improvements and utilities

(1) at or near the work site, and

(2) on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

(End of clause)

52.236-10 OPERATIONS AND STORAGE AREAS (APR 1984)

(a) The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.

(b) Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.

(c) The Contractor shall, under regulations prescribed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

(End of clause)

52.236-11 *USE AND POSSESSION PRIOR TO COMPLETION (APR 1984)*

(a) The Government shall have the right to take possession of or use any completed or partially completed part of the work. Before taking possession of or using any work, the Contracting Officer shall furnish the Contractor a list of items of work remaining to be performed or corrected on those portions of the work that the Government intends to take possession of or use. However, failure of the Contracting Officer to list any item of work shall not relieve the Contractor of responsibility for complying with the terms of the contract. The Government's possession or use shall not be deemed an acceptance of any work under the contract.

(b) While the Government has such possession or use, the Contractor shall be relieved of the responsibility for the loss of or damage to the work resulting from the Government's possession or use, notwithstanding the terms of the clause in this contract entitled "Permits and Responsibilities." If prior possession or use by the Government delays the progress of the work or causes additional expense to the Contractor, an equitable adjustment shall be made in the contract price or the time of completion, and the contract shall be modified in writing accordingly.

(End of clause)

52.236-12 *CLEANING UP (APR 1984)*

The Contractor shall at all times keep the work area, including storage areas, free from accumulations of waste materials. Before completing the work, the Contractor shall remove from the work and premises any rubbish, tools, scaffolding, equipment, and materials that are not the property of the Government. Upon completing the work, the Contractor shall leave the work area in a clean, neat, and orderly condition satisfactory to the Contracting Officer.

(End of clause)

52.236-13 *ACCIDENT PREVENTION (NOV 1991) – ALTERNATE I (NOV 1991)*

(a) The Contractor shall provide and maintain work environments and procedures which will

(1) safeguard the public and Government personnel, property, materials, supplies, and equipment exposed to Contractor operations and activities;

(2) avoid interruptions of Government operations and delays in project completion dates; and

(3) control costs in the performance of this contract.

(b) For these purposes on contracts for construction or dismantling, demolition, or removal of improvements, the Contractor shall-

(1) Provide appropriate safety barricades, signs, and signal lights;

(2) Comply with the standards issued by the Secretary of Labor at 29 CFR Part 1926 and 29 CFR Part 1910; and

(3) Ensure that any additional measures the Contracting Officer determines to be reasonably necessary for the purposes are taken.

(f) If this contract is for construction or dismantling, demolition or removal of improvements with any Department of Defense agency or component, the Contractor shall comply with all pertinent provisions of the latest version of U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, in effect on the date of the solicitation.

(iii) Whenever the Contracting Officer becomes aware of any noncompliance with these requirements or any condition which poses a serious or imminent danger to the health or safety of the public or Government personnel, the Contracting Officer shall notify the Contractor orally, with written confirmation, and request immediate initiation of corrective action. This notice, when delivered to the Contractor or the Contractor's representative at the work site, shall be deemed sufficient notice of the noncompliance and that corrective action is required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to promptly take corrective action, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall not be entitled to any equitable adjustment of the contract price or extension of the performance schedule on any stop work order issued under this clause.

(e) The Contractor shall insert this clause, including this paragraph (e), with appropriate changes in the designation of the parties, in subcontracts.

(f) Before commencing the work, the Contractor shall-

(1) Submit a written proposed plan for implementing this clause. The plan shall include an analysis of the significant hazards to life, limb, and property inherent in contract work performance and a plan for controlling these hazards; and

(2) Meet with representatives of the Contracting Officer to discuss and develop a mutual understanding relative to administration of the overall safety program.

(End of clause)

52.236-15 SCHEDULES FOR CONSTRUCTION CONTRACTS (APR 1984)

(a) The Contractor shall, within five days after the work commences on the contract or another period of time determined by the Contracting Officer, prepare and submit to the Contracting Officer for approval three copies of a practicable schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of the work (including

acquiring materials, plant, and equipment). The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion by any given date during the period. If the Contractor fails to submit a schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments until the Contractor submits the required schedule.

(b) The Contractor shall enter the actual progress on the chart as directed by the Contracting Officer, and upon doing so shall immediately deliver three copies of the annotated schedule to the Contracting Officer. If, in the opinion of the Contracting Officer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve its progress, including those that may be required by the Contracting Officer, without additional cost to the Government. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules in chart form as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained.

(c) Failure of the Contractor to comply with the requirements of the Contracting Officer under this clause shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the default terms of this contract.

(End of clause)

52.236-16 QUANTITY SURVEYS (APR 1984) - ALTERNATE I (APR 1984)

(a) Quantity surveys shall be conducted, and the data derived from these surveys shall be used in computing the quantities of work performed and the actual construction completed and in place.

(b) The Contractor shall conduct the original and final surveys and surveys for any periods for which progress payments are requested. All these surveys shall be conducted under the direction of a representative of the Contracting Officer, unless the Contracting Officer waives this requirement in a specific instance. The Government shall make such computations as are necessary to determine the quantities of work performed or finally in place. The Contractor shall make the computations based on the surveys for any periods for which progress payments are requested.

(c) Promptly upon completing a survey, the Contractor shall furnish the originals of all field notes and all other records relating to the survey or to the layout of the work to the Contracting Officer, who shall use them as necessary to determine the amount of progress payments. The

Contractor shall retain copies of all such material furnished to the Contracting Officer.

(End of clause)

52.236-17 LAYOUT OF WORK (APR 1984)

The Contractor shall lay out its work from Government established base lines and bench marks indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at its own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through its negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due or to become due to the Contractor.

(End of clause)

52.236-21 SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (FEB 1997)

(a) The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy in the figures, in the drawings, or in the specifications, the matter shall be promptly submitted to the Contracting Officer, who shall promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at its own risk and expense. The Contracting Officer shall furnish from time to time such detailed drawings and other information as considered necessary, unless otherwise provided.

(b) Wherever in the specifications or upon the drawings the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription", of the Contracting Officer is intended and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by," or "acceptable to", or "satisfactory to" the Contracting Officer, unless otherwise expressly stated.

(c) Where "as shown," "as indicated", "as detailed", or words of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provide complete in place," that is "furnished and installed".

(d) Shop drawings means drawings, submitted to the Government by the Contractor, subcontractor, or any lower tier subcontractor pursuant to a construction contract, showing in detail (1) the proposed fabrication and assembly of structural elements, and (2) the installation (i.e., fit, and attachment details) of materials or equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the contractor to explain in detail specific portions of the work required by the contract. The Government may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.

(e) If this contract requires shop drawings, the Contractor shall coordinate all such drawings, and review them for accuracy, completeness, and compliance with contract requirements and shall indicate its approval thereon as evidence of such coordination and review. Shop drawings submitted to the Contracting Officer without evidence of the Contractor's approval may be returned for resubmission. The Contracting Officer will indicate an approval or disapproval of the shop drawings and if not approved as submitted shall indicate the Government's reasons therefor. Any work done before such approval shall be at the Contractor's risk. Approval by the Contracting Officer shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance with (f) below.

(f) If shop drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the drawings, at the time of submission. If the Contracting Officer approves any such variation, the Contracting Officer shall issue an appropriate contract modification, except that, if the variation is minor or does not involve a change in price or in time of performance, a modification need not be issued.

(g) The Contractor shall submit to the Contracting Officer for approval four copies (unless otherwise indicated) of all shop drawings as called for under the various headings of these specifications. Three sets (unless otherwise indicated) of all shop drawings, will be retained by the Contracting Officer and one set will be returned to the Contractor.

(End of clause)

52.236-26 *PRECONSTRUCTION CONFERENCE (FEB 1995)*

If the Contracting Officer decides to conduct a preconstruction conference, the successful offeror will be notified and will be required to attend. The Contracting Officer's notification will include specific details regarding the date, time, and location of the conference, any need for attendance by subcontractors, and information regarding the items to be discussed.

(End of clause)

52.242-13 *BANKRUPTCY (JUL 1995)*

In the event the Contractor enters into proceedings relating to bankruptcy, whether voluntary or involuntary, the Contractor agrees to furnish, by certified mail or electronic commerce method authorized by the contract, written notification of the bankruptcy to the Contracting Officer responsible for administering the contract. This notification shall be furnished within five days of the initiation of the proceedings relating to bankruptcy filing. This notification shall include the date on which the bankruptcy petition was filed, the identity of the court in which the bankruptcy petition was filed, and a listing of Government contract numbers and contracting offices for all Government contracts against which final payment has not been made. This obligation remains in effect until final payment under this contract.

(End of clause)

52.242-14 *SUSPENSION OF WORK (APR 1984)*

(a) The Contracting Officer may order the Contractor, in writing, to suspend, delay, or interrupt all or any part of the work of this contract for the period of time that the Contracting Officer determines appropriate for the convenience of the Government.

(b) If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted (1) by an act of the Contracting Officer in the administration of this contract, or (2) by the Contracting Officer's failure to act within the time specified in this contract (or within a reasonable time if not specified), an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) necessarily caused by the unreasonable suspension, delay, or interruption, and the contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor, or for which an equitable adjustment is provided for or excluded under any other term or condition of this contract. (c) A claim under this clause shall not be allowed (1) for any costs incurred more than 20 days before the Contractor shall have notified the Contracting Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order), and (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of the suspension, delay, or interruption, but not later than the date of final payment under the contract.

(End of clause)

52.243-4 *CHANGES (AUG 1987)*

(a) The Contracting Officer may, at any time, without notice to the sureties, if any, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract, including changes--

- (1) In the specifications (including drawings and designs);
- (2) In the method or manner of performance of the work;
- (3) In the Government-furnished facilities, equipment, materials, services, or site; or
- (4) Directing acceleration in the performance of the work.

(b) Any other written or oral order (which, as used in this paragraph (b), includes direction, instruction, interpretation, or determination) from the Contracting Officer that causes a change shall be treated as a change order under this clause; provided, that the Contractor gives the Contracting Officer written notice stating

- (1) the date, circumstances, and source of the order and
- (2) that the Contractor regards the order as a change order.

(c) Except as provided in this clause, no order, statement, or conduct of the Contracting Officer shall be treated as a

change under this clause or entitle the Contractor to an equitable adjustment.

(d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for, the performance of any part of the work under this contract, whether or not changed by any such order, the Contracting Officer shall make an equitable adjustment and modify the contract in writing. However, except for an adjustment based on defective specifications, no adjustment for any change under paragraph (b) of this clause shall be made for any costs incurred more than 20 days before the Contractor gives written notice as required. In the case of defective specifications for which the Government is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with the defective specifications.

(e) The Contractor must assert its right to an adjustment under this clause within 30 days after

(1) receipt of a written change order under paragraph (a) of this clause or (2) the furnishing of a written notice under paragraph (b) of this clause, by submitting to the Contracting Officer a written statement describing the general nature and amount of the proposal, unless this period is extended by the Government. The statement of proposal for adjustment may be included in the notice under paragraph (b) above.

(f) No proposal by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.

(End of clause)

52.244-6 SUBCONTRACTS FOR COMMERCIAL ITEMS (MAY 2002)

(a) Definitions.

"Commercial item", has the meaning contained in the clause at 52.202-1, Definitions.

"Subcontract", includes a transfer of commercial items between divisions, subsidiaries, or affiliates of the Contractor or subcontractor at any tier.

(b) To the maximum extent practicable, the Contractor shall incorporate, and require its subcontractors at all tiers to incorporate, commercial items or nondevelopmental items as components of items to be supplied under this contract.

(c) (1) The Contractor shall insert the following clauses in subcontracts for commercial items:

(i) 52.219-8, Utilization of Small Business Concerns (OCT 2000) (15 U.S.C. 637(d)(2) and (3)), in all subcontracts that offer further subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceeds \$500,000 (\$1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

(ii) 52.222-26, Equal Opportunity (Apr 2002) (E.O. 11246).

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212(a)).

(iv) 52.222-36, Affirmative Action for Workers with Disabilities (JUN 1998) (29 U.S.C. 793).

(v) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (JUN 2000) (46 U.S.C. Appx 1241) (flowdown not required for subcontracts awarded beginning May 1, 1996).

(2) While not required, the Contractor may flow down to subcontracts for commercial items a minimal number of additional clauses necessary to satisfy its contractual obligations.

(d) The Contractor shall include the terms of this clause, including this paragraph (d), in subcontracts awarded under this contract.

(End of clause)

52.246-12 INSPECTION OF CONSTRUCTION (AUG 1996)

(a) Definition. "Work" includes, but is not limited to, materials, workmanship, and manufacture and fabrication of components.

(b) The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work performed under the contract conforms to contract requirements. The Contractor shall maintain complete inspection records and make them available to the Government. All work shall be conducted under the general direction of the Contracting Officer and is subject to Government inspection and test at all places and at all reasonable times before acceptance to ensure strict compliance with the terms of the contract.

(c) Government inspections and tests are for the sole benefit of the Government and do not--

(1) Relieve the Contractor of responsibility for providing adequate quality control measures;

(2) Relieve the Contractor of responsibility for damage to or loss of the material before acceptance;

(3) Constitute or imply acceptance; or

(4) Affect the continuing rights of the Government after acceptance of the completed work under paragraph (i) of this section.

(d) The presence or absence of a Government inspector does not relieve the Contractor from any contract requirement, nor is the inspector authorized to change any term or condition of the specification without the Contracting Officer's written authorization.

(e) The Contractor shall promptly furnish, at no increase in contract price, all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by the Contracting Officer. The Government may charge to the Contractor any additional cost of inspection or test when work is not ready at the time specified by the Contractor for inspection or test, or when prior rejection makes reinspection or retest necessary. The Government shall perform all inspections and tests in a manner that will not unnecessarily delay the work. Special, full size, and performance tests shall be performed as described in the contract.

(f) The Contractor shall, without charge, replace or correct work found by the Government not to conform to contract requirements, unless in the public interest the Government consents to accept the work with an appropriate

adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.

(g) If the Contractor does not promptly replace or correct rejected work, the Government may (1) by contract or otherwise, replace or correct the work and charge the cost to the Contractor or (2) terminate for default the Contractor's right to proceed.

(h) If, before acceptance of the entire work, the Government decides to examine already completed work by removing it or tearing it out, the Contractor, on request, shall promptly furnish all necessary facilities, labor, and material. If the work is found to be defective or nonconforming in any material respect due to the fault of the Contractor or its subcontractors, the Contractor shall defray the expenses of the examination and of satisfactory reconstruction. However, if the work is found to meet contract requirements, the Contracting Officer shall make an equitable adjustment for the additional services involved in the examination and reconstruction, including, if completion of the work was thereby delayed, an extension of time.

(i) Unless otherwise specified in the contract, the Government shall accept, as promptly as practicable after completion and inspection, all work required by the contract or that portion of the work the Contracting Officer determines can be accepted separately. Acceptance shall be final and conclusive except for latent defects, fraud, gross mistakes amounting to fraud, or the Government's rights under any warranty or guarantee.

(End of clause)

52.246-21 WARRANTY OF CONSTRUCTION (MAR 1994)

(a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (i) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

(b) This warranty shall continue for a period of 1 year from the date of final acceptance of the work. If the Government takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the Government takes possession.

(c) The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Government-owned or controlled real or personal property, when that damage is the result of--

(1) The Contractor's failure to conform to contract requirements; or

(2) Any defect of equipment, material, workmanship, or design furnished.

(d) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement.

(e) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage.

(f) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the Government shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

(g) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall--

(1) Obtain all warranties that would be given in normal commercial practice;

(2) Require all warranties to be executed, in writing, for the benefit of the Government, if directed by the Contracting Officer; and

(3) Enforce all warranties for the benefit of the Government, if directed by the Contracting Officer.

(h) In the event the Contractor's warranty under paragraph (b) of this clause has expired, the Government may bring suit at its expense to enforce a subcontractor's, manufacturer's, or supplier's warranty.

(i) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material or design furnished by the Government nor for the repair of any damage that results from any defect in Government-furnished material or design.

(j) This warranty shall not limit the Government's rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistakes, or fraud.

(End of clause)

52.247-34 F.O.B. DESTINATION (NOV 1991)

(a) The term "f.o.b. destination," as used in this clause, means--

(1) Free of expense to the Government, on board the carrier's conveyance, at a specified delivery point where the consignee's facility (plant, warehouse, store, lot, or other location to which shipment can be made) is located; and

(2) Supplies shall be delivered to the destination consignee's wharf (if destination is a port city and supplies are for export), warehouse unloading platform, or receiving dock, at the expense of the Contractor. The Government shall not be liable for any delivery, storage, demurrage, accessorial, or other charges involved before the actual delivery (or "constructive placement" as defined in carrier tariffs) of the supplies to the destination, unless such charges are caused by an act or order of the Government acting in its contractual capacity. If rail carrier is used, supplies shall be delivered to the specified unloading platform of the consignee. If motor carrier (including "piggyback") is used, supplies shall be delivered to truck tailgate at the unloading platform of the consignee, except when the supplies delivered meet the requirements of Item 568 of the National Motor Freight Classification for "heavy or bulky freight." When supplies meeting the requirements of the referenced Item 568 are delivered, unloading (including movement to the tailgate) shall be performed by the consignee, with assistance from the truck driver, if requested. If the contractor uses rail carrier or freight forwarded for less than carload shipments, the contractor shall ensure that the carrier will furnish tailgate delivery, when required, if transfer to truck is required to complete delivery to consignee.

(b) The Contractor shall--

- (1)(i) Pack and mark the shipment to comply with contract specifications; or
 - (ii) In the absence of specifications, prepare the shipment in conformance with carrier requirements;
 - (2) Prepare and distribute commercial bills of lading;
 - (3) Deliver the shipment in good order and condition to the point of delivery specified in the contract;
 - (4) Be responsible for any loss of and/or damage to the goods occurring before receipt of the shipment by the consignee at the delivery point specified in the contract;
 - (5) Furnish a delivery schedule and designate the mode of delivering carrier; and
 - (6) Pay and bear all charges to the specified point of delivery.
- (End of clause)

52.248-3 VALUE ENGINEERING--CONSTRUCTION (FEB 2000)

(a) General. The Contractor is encouraged to develop, prepare, and submit value engineering change proposals (VECP's) voluntarily. The Contractor shall share in any instant contract savings realized from accepted VECP's, in accordance with paragraph (f) below.

(b) Definitions. "Collateral costs," as used in this clause, means agency costs of operation, maintenance, logistic support, or Government-furnished property.

"Collateral savings," as used in this clause, means those measurable net reductions resulting from a VECP in the agency's overall projected collateral costs, exclusive of acquisition savings, whether or not the acquisition cost changes.

"Contractor's development and implementation costs," as used in this clause, means those costs the Contractor incurs on a VECP specifically in developing, testing, preparing, and submitting the VECP, as well as those costs the Contractor incurs to make the contractual changes required by Government acceptance of a VECP.

"Government costs," as used in this clause, means those agency costs that result directly from developing and implementing the VECP, such as any net increases in the cost of testing, operations, maintenance, and logistic support. The term does not include the normal administrative costs of processing the VECP.

"Instant contract savings," as used in this clause, means the estimated reduction in Contractor cost of performance resulting from acceptance of the VECP, minus allowable Contractor's development and implementation costs, including subcontractors' development and implementation costs (see paragraph (h) below).

"Value engineering change proposal (VECP)" means a proposal that--

- (1) Requires a change to this, the instant contract, to implement; and

(2) Results in reducing the contract price or estimated cost without impairing essential functions or characteristics; provided, that it does not involve a change--

(i) In deliverable end item quantities only; or

(ii) To the contract type only.

(c) VECP preparation. As a minimum, the Contractor shall include in each VECP the information described in subparagraphs (1) through (7) below. If the proposed change is affected by contractually required configuration management or similar procedures, the instructions in those procedures relating to format, identification, and priority assignment shall govern VECP preparation. The VECP shall include the following:

(1) A description of the difference between the existing contract requirement and that proposed, the comparative advantages and disadvantages of each, a justification when an item's function or characteristics are being altered, and the effect of the change on the end item's performance.

(2) A list and analysis of the contract requirements that must be changed if the VECP is accepted, including any suggested specification revisions.

(3) A separate, detailed cost estimate for

(i) the affected portions of the existing contract requirement and

(ii) the VECP. The cost reduction associated with the VECP shall take into account the Contractor's allowable development and implementation costs, including any amount attributable to subcontracts under paragraph (h) below.

(4) A description and estimate of costs the Government may incur in implementing the VECP, such as test and evaluation and operating and support costs.

(5) A prediction of any effects the proposed change would have on collateral costs to the agency.

(6) A statement of the time by which a contract modification accepting the VECP must be issued in order to achieve the maximum cost reduction, noting any effect on the contract completion time or delivery schedule.

(7) Identification of any previous submissions of the VECP, including the dates submitted, the agencies and contract numbers involved, and previous Government actions, if known.

(d) Submission. The Contractor shall submit VECP's to the Resident Engineer at the worksite, with a copy to the Contracting Officer.

(e) Government action.

(1) The Contracting Officer will notify the Contractor of the status of the VECP within 45 calendar days after the contracting office receives it. If additional time is required, the Contracting Officer will notify the Contractor within the 45-day period and provide the reason for the delay and the expected date of the decision. The Government will process VECP's expeditiously; however, it shall not be liable for any delay in acting upon a VECP.

If the VECP is not accepted, the Contracting Officer will notify the Contractor in writing, explaining the reasons for rejection. The Contractor may withdraw any VECP, in whole or in part, at any time before it is accepted by the Government. The Contracting Officer may require that the Contractor provide written notification before undertaking significant expenditures for VECP effort.

Any VECP may be accepted, in whole or in part, by the Contracting Officer's award of a modification to this contract citing this clause. The Contracting Officer may accept the VECP, even though an agreement on price reduction has not been reached, by issuing the Contractor a notice to proceed with the change. Until a notice to proceed is issued or a contract modification applies a VECP to this contract, the Contractor shall perform in accordance with the existing contract. The decision to accept or reject all or part of any VECP is a unilateral decision made solely at the discretion of the Contracting Officer.

(f) Sharing.

(1) Rates. The Government's share of savings is determined by subtracting Government costs from instant contract savings and multiplying the result by

(i) 45 percent for fixed-price contracts or

(ii) 75 percent for cost-reimbursement contracts.

(2) Payment. Payment of any share due the Contractor for use of a VECP on this contract shall be authorized by a modification to this contract to--

(i) Accept the VECP;

(ii) Reduce the contract price or estimated cost by the amount of instant contract savings; and

(iii) Provide the Contractor's share of savings by adding the amount calculated to the contract price or fee.

(g) Collateral savings. If a VECP is accepted, the Contracting Officer will increase the instant contract amount by 20 percent of any projected collateral savings determined to be realized in a typical year of use after subtracting any Government costs not previously offset. However, the Contractor's share of collateral savings will not exceed the contract's firm-fixed-price or estimated cost, at the time the VECP is accepted, or \$100,000, whichever is greater. The Contracting Officer is the sole determiner of the amount of collateral savings.

(h) Subcontracts. The Contractor shall include an appropriate value engineering clause in any subcontract of \$50,000 or more and may include one in subcontracts of lesser value. In computing any adjustment in this contract's price under paragraph (f) above, the Contractor's allowable development and implementation costs shall include any subcontractor's allowable development and implementation costs clearly resulting from a VECP accepted by the Government under this contract, but shall exclude any value engineering incentive payments to a subcontractor. The Contractor may choose any arrangement for subcontractor value engineering incentive payments; provided, that these payments shall not reduce the Government's share of the savings resulting from the VECP.

(i) Data. The Contractor may restrict the Government's right to use any part of a VECP or the supporting data by marking the following legend on the affected parts:

"These data, furnished under the Value Engineering-- Construction clause of contract, shall not be disclosed outside the Government or duplicated, used, or disclosed, in whole or in part, for any purpose other than to evaluate a value engineering change proposal submitted under the clause. This restriction does not limit the Government's right to use information contained in these data if it has been obtained or is otherwise available from the Contractor or from another source without limitations." If a VECP is accepted, the Contractor hereby grants the Government unlimited rights in the VECP and supporting data, except that, with respect to data qualifying and submitted as limited rights technical data, the Government shall have the rights specified in the contract modification implementing the VECP and shall appropriately mark the data. (The terms "unlimited rights" and "limited rights" are defined in Part 27 of the Federal Acquisition Regulation.)

(End of clause)

52.249-2 TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FIXED-PRICE) (SEP 1996) - ALTERNATE I (SEP 1996)

(a) The Government may terminate performance of work under this contract in whole or, from time to time, in part if the Contracting Officer determines that a termination is in the Government's interest. The Contracting Officer shall terminate by delivering to the Contractor a Notice of Termination specifying the extent of termination and the effective date.

(b) After receipt of a Notice of Termination, and except as directed by the Contracting Officer, the Contractor shall immediately proceed with the following obligations, regardless of any delay in determining or adjusting any amounts due under this clause:

(1) Stop work as specified in the notice.

(2) Place no further subcontracts or orders (referred to as subcontracts in this clause) for materials, services, or facilities, except as necessary to complete the continued portion of the contract.

(3) Terminate all subcontracts to the extent they relate to the work terminated.

(4) Assign to the Government, as directed by the Contracting Officer, all right, title, and interest of the Contractor under the subcontracts terminated, in which case the Government shall have the right to settle or to pay any termination settlement proposal arising out of those terminations.

(5) With approval or ratification to the extent required by the Contracting Officer, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts; the approval or ratification will be final for purposes of this clause.

(6) As directed by the Contracting Officer, transfer title and deliver to the Government (i) the fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced or acquired for the work terminated, and (ii) the completed or partially completed plans, drawings, information, and other property that, if the contract had been completed, would be required to be furnished to the Government.

(7) Complete performance of the work not terminated.

(8) Take any action that may be necessary, or that the Contracting Officer may direct, for the protection and preservation of the property related to this contract that is in the possession of the Contractor and in which the Government has or may acquire an interest.

(9) Use its best efforts to sell, as directed or authorized by the Contracting Officer, any property of the types referred to in subparagraph (b)(6) of this clause; provided, however, that the Contractor (i) is not required to extend credit to any purchaser and (ii) may acquire the property under the conditions prescribed by, and at prices approved by, the Contracting Officer. The proceeds of any transfer or disposition will be applied to reduce any payments to be made by the Government under this contract, credited to the price or cost of the work, or paid in any other manner directed by the Contracting Officer.

(c) The Contractor shall submit complete termination inventory schedules no later than 120 days from the effective date of termination, unless extended in writing by the Contracting Officer upon written request of the Contractor within this 120-day period.

(d) After expiration of the plant clearance period as defined in Subpart 45.6 of the Federal Acquisition Regulation, the Contractor may submit to the Contracting Officer a list, certified as to quantity and quality, of termination inventory not previously disposed of, excluding items authorized for disposition by the Contracting Officer. The Contractor may request the Government to remove those items or enter into an agreement for their storage. Within 15 days, the Government will accept title to those items and remove them or enter into a storage agreement. The Contracting Officer may verify the list upon removal of the items, or if stored, within 45 days from submission of the list, and shall correct the list, as necessary, before final settlement.

(e) After termination, the Contractor shall submit a final termination settlement proposal to the Contracting Officer in the form and with the certification prescribed by the Contracting Officer. The Contractor shall submit the proposal promptly, but no later than 1 year from the effective date of termination, unless extended in writing by the Contracting Officer upon written request of the Contractor within this 1-year period. However, if the Contracting Officer determines that the facts justify it, a termination settlement proposal may be received and acted on after 1 year or any extension. If the Contractor fails to submit the proposal within the time allowed, the Contracting Officer may determine, on the basis of information available, the amount, if any, due the Contractor because of the termination and shall pay the amount determined.

(f) Subject to paragraph (e) of this clause, the Contractor and the Contracting Officer may agree upon the whole or any part of the amount to be paid or remaining to be paid because of the termination. The amount may include a reasonable allowance for profit on work done. However, the agreed amount, whether under this paragraph (g) or paragraph (g) of this clause, exclusive of costs shown in subparagraph (g)(3) of this clause, may not exceed the total contract price as reduced by (1) the amount of payments previously made and (2) the contract price of work not terminated. The contract shall be modified, and the Contractor paid the agreed amount. Paragraph (g) of this clause shall not limit, restrict, or affect the amount that may be agreed upon to be paid under this paragraph.

(g) If the Contractor and Contracting Officer fail to agree on the whole amount to be paid the Contractor because of the termination of work, the Contracting Officer shall pay the Contractor the amounts determined as follows, but without duplication of any amounts agreed upon under paragraph (f) of this clause:

(1) For contract work performed before the effective date of termination, the total (without duplication of any items) of--

(i) The cost of this work;

(ii) The cost of settling and paying termination settlement proposals under terminated subcontracts that are properly chargeable to the terminated portion of the contract if not included in subdivision (g)(1)(i) of this clause; and

(iii) A sum, as profit on subdivision (g)(1)(i) of this clause, determined by the Contracting Officer under 49.202 of the Federal Acquisition Regulation, in effect on the date of this contract, to be fair and reasonable; however, if it appears that the Contractor would have sustained a loss on the entire contract had it been completed, the Contracting Officer shall allow no profit under this subdivision (iii) and shall reduce the settlement to reflect the indicated rate of loss.

(2) The reasonable costs of settlement of the work terminated, including--

(i) Accounting, legal, clerical, and other expenses reasonably necessary for the preparation of termination settlement proposals and supporting data;

(ii) The termination and settlement of subcontracts (excluding the amounts of such settlements); and

(iii) Storage, transportation, and other costs incurred, reasonably necessary for the preservation, protection, or disposition of the termination inventory.

(h) Except for normal spoilage, and except to the extent that the Government expressly assumed the risk of loss, the Contracting Officer shall exclude from the amounts payable to the Contractor under paragraph (g) of this clause, the fair value, as determined by the Contracting Officer, of property that is destroyed, lost, stolen, or damaged so as to become undeliverable to the Government or to a buyer.

(i) The cost principles and procedures of Part 31 of the Federal Acquisition Regulation, in effect on the date of this contract, shall govern all costs claimed, agreed to, or determined under this clause.

(j) The Contractor shall have the right of appeal, under the Disputes clause, from any determination made by the Contracting Officer under paragraph (e), (g), or (l) of this clause, except that if the Contractor failed to submit the termination settlement proposal or request for equitable adjustment within the time provided in paragraph (e) or (l), respectively, and failed to request a time extension, there is no right of appeal.

(k) In arriving at the amount due the Contractor under this clause, there shall be deducted--

(1) All unliquidated advance or other payments to the Contractor under the terminated portion of this contract;

(2) Any claim which the Government has against the Contractor under this contract; and

(3) The agreed price for, or the proceeds of sale of, materials, supplies, or other things acquired by the Contractor or sold under the provisions of this clause and not recovered by or credited to the Government.

(l) If the termination is partial, the Contractor may file a proposal with the Contracting Officer for an equitable adjustment of the price(s) of the continued portion of the contract. The Contracting Officer shall make any equitable adjustment agreed upon. Any proposal by the Contractor for an equitable adjustment under this clause shall be requested within 90 days from the effective date of termination unless extended in writing by the Contracting Officer.

(m)(1) The Government may, under the terms and conditions it prescribes, make partial payments and payments against costs incurred by the Contractor for the terminated portion of the contract, if the Contracting Officer believes the total of these payments will not exceed the amount to which the Contractor will be entitled.

(2) If the total payments exceed the amount finally determined to be due, the Contractor shall repay the excess to the Government upon demand, together with interest computed at the rate established by the Secretary of the Treasury under 50 U.S.C. App. 1215(b)(2). Interest shall be computed for the period from the date the excess payment is received by the Contractor to the date the excess is repaid. Interest shall not be charged on any excess payment due to a reduction in the Contractor's termination settlement proposal because of retention or other disposition of termination inventory until 10 days after the date of the retention or disposition, or a later date determined by the Contracting Officer because of the circumstances.

(n) Unless otherwise provided in this contract or by statute, the Contractor shall maintain all records and documents relating to the terminated portion of this contract for 3 years after final settlement. This includes all books and other evidence bearing on the Contractor's costs and expenses under this contract. The Contractor shall make these records and documents available to the Government, at the Contractor's office, at all reasonable times, without any direct charge. If approved by the Contracting Officer, photographs, microphotographs, or other authentic reproductions may be maintained instead of original records and documents.

(End of clause)

52.249-10 DEFAULT (FIXED-PRICE CONSTRUCTION) (APR 1984)

(a) If the Contractor refuses or fails to prosecute the work or any separable part, with the diligence that will insure its completion within the time specified in this contract including any extension, or fails to complete the work within this time, the Government may, by written notice to the Contractor, terminate the right to proceed with the work (or the separable part of the work) that has been delayed. In this event, the Government may take over the work and complete it by contract or otherwise, and may take possession of and use any materials, appliances, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to the Government resulting from the Contractor's refusal or failure to complete the work within the specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the Government in completing the work.

(b) The Contractor's right to proceed shall not be terminated nor the Contractor charged with damages under this clause, if--

(1) The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include

(i) acts of God or of the public enemy,

(ii) acts of the Government in either its sovereign or contractual capacity,

(iii) acts of another Contractor in the performance of a contract with the Government,

(iv) fires,

(v) floods,

(vi) epidemics,

(vii) quarantine restrictions,

(viii) strikes,

(ix) freight embargoes,

(x) unusually severe weather, or delays of subcontractors or suppliers at any tier arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and the subcontractors or suppliers; and

(2) The Contractor, within 10 days from the beginning of any delay (unless extended by the Contracting Officer), notifies the Contracting Officer in writing of the causes of delay. The Contracting Officer shall ascertain the facts and the extent of delay. If, in the judgment of the Contracting Officer, the findings of fact warrant such action, the time for completing the work shall be extended. The findings of the Contracting Officer shall be final and conclusive on the parties, but subject to appeal under the Disputes clause.

(c) If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been issued for the convenience of the Government.

The rights and remedies of the Government in this clause are in addition to any other rights and remedies provided by law or under this contract.

(End of clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

www.arnet.gov/far

(End of clause)

52.253-1 COMPUTER GENERATED FORMS (JAN 1991)

(a) Any data required to be submitted on a Standard or Optional Form prescribed by the Federal Acquisition Regulation (FAR) may be submitted on a computer generated version of the form, provided there is no change to the name, content, or sequence of the data elements on the form, and provided the form carries the Standard or Optional Form number and edition date.

(b) Unless prohibited by agency regulations, any data required to be submitted on an agency unique form prescribed by an agency supplement to the FAR may be submitted on a computer generated version of the form provided there is no change to the name, content, or sequence of the data elements on the form and provided the form carries the agency form number and edition date.

(g) If the Contractor submits a computer generated version of a form that is different than the required form, then the rights and obligations of the parties will be determined based on the content of the required form.

(End of clause)

252.201-7000 CONTRACTING OFFICER'S REPRESENTATIVE (DEC 1991)

(a) "Definition. Contracting officer's representative" means an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the contracting officer to perform specific technical or administrative functions.

(b) If the Contracting Officer designates a contracting officer's representative (COR), the Contractor will receive a copy of the written designation. It will specify the extent of the COR's authority to act on behalf of the contracting officer. The COR is not authorized to make any commitments or changes that will affect price, quality, quantity, delivery, or any other term or condition of the contract.

(End of clause)

252.203-7001 PROHIBITION ON PERSONS CONVICTED OF FRAUD OR OTHER DEFENSE-CONTRACT-RELATED FELONIES (MAR 1999)

(a) Definitions. As used in this clause—

(1) "Arising out of a contract with the DoD" means any act in connection with—

(i) Attempting to obtain;

(ii) Obtaining, or

(iii) Performing a contract or first-tier subcontract of any agency, department, or component of the Department of Defense (DoD).

(2) "Conviction of fraud or any other felony" means any conviction for fraud or a felony in violation of state or Federal criminal statutes, whether entered on a verdict or plea, including a plea of *nolo contendere*, for which sentence has been imposed.

(3) "Date of conviction" means the date judgment was entered against the individual.

(b) Any individual who is convicted after September 29, 1988, of fraud or any other felony arising out of a contract with the DoD is prohibited from serving--

(1) In a management or supervisory capacity on any DoD contract or first-tier subcontract;

(2) On the board of directors of any DoD contractor or first-tier subcontractor;

(3) As a consultant, agent, or representative for any DoD contractor or first-tier subcontractor; or

(4) In any other capacity with the authority to influence, advise, or control the decisions of any DoD contractor or subcontractor with regard to any DoD contract or first-tier subcontract.

(c) Unless waived, the prohibition in paragraph (b) of this clause applies for not less than 5 years from the date of conviction.

(d) 10 U.S.C. 2408 provides that a defense contractor or first-tier subcontractor shall be subject to a criminal penalty of not more than \$500,000 if convicted of knowingly—

- (1) Employing a person under a prohibition specified in paragraph (b) of this clause; or
- (2) Allowing such a person to serve on the board of directors of the contractor or first-tier subcontractor.

(e) In addition to the criminal penalties contained in 10 U.S.C. 2408, the Government may consider other available remedies, such as—

- (1) Suspension or debarment;
- (2) Cancellation of the contract at no cost to the Government; or
- (3) Termination of the contract for default.

(f) The Contractor may submit written requests for waiver of the prohibition in paragraph (b) of this clause to the Contracting Officer. Requests shall clearly identify—

- (1) The person involved;
- (2) The nature of the conviction and resultant sentence or punishment imposed;
- (3) The reasons for the requested waiver; and
- (4) An explanation of why a waiver is in the interest of national security.

(g) The Contractor agrees to include the substance of this clause, appropriately modified to reflect the identity and relationship of the parties, in all first-tier subcontracts exceeding the simplified acquisition threshold in Part 2 of the Federal Acquisition Regulation, except those for commercial items or components.

(h) Pursuant to 10 U.S.C. 2408(c), defense contractors and subcontractors may obtain information as to whether a particular person has been convicted of fraud or any other felony arising out of a contract with the DoD by contacting The Office of Justice Programs, The Denial of Federal Benefits Office, U.S. Department of Justice, telephone (202) 616-3507.

(End of clause)

252.204-7003 CONTROL OF GOVERNMENT PERSONNEL WORK PRODUCT (APR 1992)

The Contractor's procedures for protecting against unauthorized disclosure of information shall not require Department of Defense employees or members of the Armed Forces to relinquish control of their work products, whether classified or not, to the contractor.

(End of clause)

252.204-7004 REQUIRED CENTRAL CONTRACTOR REGISTRATION (NOV 2001)

(a) Definitions.

As used in this clause--

(1) Central Contractor Registration (CCR) database means the primary DoD repository for contractor information required for the conduct of business with DoD.

(2) Data Universal Numbering System (DUNS) number means the 9-digit number assigned by Dun and Bradstreet Information Services to identify unique business entities.

(3) Data Universal Numbering System +4 (DUNS+4) number means the DUNS number assigned by Dun and Bradstreet plus a 4-digit suffix that may be assigned by a parent (controlling) business concern. This 4-digit suffix may be assigned at the discretion of the parent business concern for such purposes as identifying subunits or affiliates of the parent business concern.

(4) Registered in the CCR database means that all mandatory information, including the DUNS number or the DUNS+4 number, if applicable, and the corresponding Commercial and Government Entity (CAGE) code, is in the CCR database; the DUNS number and the CAGE code have been validated; and all edits have been successfully completed.

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee must be registered in the CCR database prior to award, during performance, and through final payment of any contract resulting from this solicitation, except for awards to foreign vendors for work to be performed outside the United States.

(2) The offeror shall provide its DUNS or, if applicable, its DUNS+4 number with its offer, which will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(3) Lack of registration in the CCR database will make an offeror ineligible for award.

(4) DoD has established a goal of registering an applicant in the CCR database within 48 hours after receipt of a complete and accurate application via the Internet. However, registration of an applicant submitting an application through a method other than the Internet may take up to 30 days. Therefore, offerors that are not registered should consider applying for registration immediately upon receipt of this solicitation.

(c) The Contractor is responsible for the accuracy and completeness of the data within the CCR, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to confirm on an annual basis that its information in the CCR database is accurate and complete.

(d) Offerors and contractors may obtain information on registration and annual confirmation requirements by calling 1-888-227-2423, or via the Internet at <http://www.ccr.gov>.

(End of clause)

252.205-7000 PROVISION OF INFORMATION TO COOPERATIVE AGREEMENT HOLDERS (DEC 1991)

(a) Definition.

"Cooperative agreement holder" means a State or local government; a private, nonprofit organization; a tribal organization (as defined in section 4(c) of the Indian Self-Determination and Education Assistance Act (Pub. L. 93-268; 25 U.S.C. 450 (c))); or an economic enterprise (as defined in section 3(e) of the Indian Financing Act of 1974 (Pub. L. 93-362; 25 U.S.C. 1452(e))) whether such economic enterprise is organized for profit or nonprofit purposes; which has an agreement with the Defense Logistics Agency to furnish procurement technical assistance to business entities.

(b) The Contractor shall provide cooperative agreement holders, upon their request, with a list of those appropriate employees or offices responsible for entering into subcontracts under defense contracts. The list shall include the business address, telephone number, and area of responsibility of each employee or office.

(c) The Contractor need not provide the listing to a particular cooperative agreement holder more frequently than once a year.

(End of clause)

252.209-7000 ACQUISITION FROM SUBCONTRACTORS SUBJECT TO ONSITE INSPECTION UNDER THE INTERMEDIATE-RANGE NUCLEAR FORCES (INF) TREATY (NOV 1995)

(a) The Contractor shall not deny consideration for a subcontract award under this contract to a potential subcontractor subject to on-site inspection under the INF Treaty, or a similar treaty, solely or in part because of the actual or potential presence of Soviet inspectors at the subcontractor's facility, unless the decision is approved by the Contracting Officer.

(b) The Contractor shall incorporate this clause, including this paragraph (b), in all solicitations and contracts exceeding the simplified acquisition threshold in part 13 of the Federal Acquisition Regulation, except those for commercial items.

(End of clause)

252.209-7004 SUBCONTRACTING WITH FIRMS THAT ARE OWNED OR CONTROLLED BY THE GOVERNMENT OF A TERRORIST COUNTRY (MAR 1998)

(a) Unless the Government determines that there is a compelling reason to do so, the Contractor shall not enter into any subcontract in excess of \$25,000 with a firm, or subsidiary of a firm, that is identified, on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs, as being ineligible for the award of Defense contracts or subcontracts because it is owned or controlled by the government of a terrorist country.

(b) A corporate officer or a designee of the Contractor shall notify the Contracting Officer, in writing, before entering into a subcontract with a party that is identified, on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs, as being ineligible for the award of Defense contracts or subcontracts because it is owned or controlled by the government of a terrorist country. The notice must include the name of the proposed subcontractor notwithstanding its inclusion on the List of Parties Excluded From Federal Procurement and Nonprocurement Programs.

(End of clause)

252.219-7003 SMALL, SMALL DISADVANTAGED AND WOMEN-OWNED SMALL BUSINESS SUBCONTRACTING PLAN (DOD CONTRACTS) (APR. 1996)

This clause supplements the Federal Acquisition Regulation 52.219-9, Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan, clause of this contract.

(a) *Definitions. Historically black colleges and universities*, as used in this clause, means institutions determined by the Secretary of Education to meet the requirements of 34 CFR 608.2. The term also means any nonprofit research institution that was an integral part of such a college or university before November 14, 1986.

Minority institutions, as used in this clause, means institutions meeting the requirements of section 1046(3) of the Higher Education Act of 1965 (20 U.S.C. 1135d-5(3)). The term also includes Hispanic-serving institutions as defined in section 316(b)(1) of such Act (20 U.S.C. 1059c(b)(1)).

(b) Except for company or division-wide commercial items subcontracting plans, the term *small disadvantaged business*, when used in the FAR 52.219-9 clause, includes historically black colleges and universities and minority institutions, in addition to small disadvantaged business concerns.

(c) Work under the contract or its subcontracts shall be credited toward meeting the small disadvantaged business concern goal required by paragraph (d) of the FAR 52.219-9 clause when:

- (1) It is performed on Indian lands or in joint venture with an Indian tribe or a tribally-owned corporation, and
- (2) It meets the requirements of 10 U.S.C. 2323a.

(d) Subcontracts awarded to workshops approved by the Committee for Purchase from People Who are Blind or Severely Disabled (41 U.S.C. 46-48), may be counted toward the Contractor's small business subcontracting goal.

(e) A mentor firm, under the Pilot Mentor-Protege Program established under Section 831 of Pub. L. 101-510, as amended, may count toward its small disadvantaged business goal, subcontracts awarded--

(f) The master plan approval referred to in paragraph (f) of the FAR 52.219-9 clause is approval by the Contractor's cognizant contract administration activity.

(g) In those subcontracting plans which specifically identify small, small disadvantaged, and women-owned small businesses, the Contractor shall notify the Administrative Contracting Officer of any substitutions of firms that are not small, small disadvantaged, or women-owned small businesses for the firms listed in the subcontracting plan. Notifications shall be in writing and shall occur within a reasonable period of time after award of the subcontract. Contractor-specified formats shall be acceptable.

(End of clause)

252.223-7004 DRUG-FREE WORK FORCE (SEP 1988)

(a) Definitions.

(1) "Employee in a sensitive position," as used in this clause, means an employee who has been granted access to classified information; or employees in other positions that the Contractor determines involve national security; health or safety, or functions other than the foregoing requiring a high degree of trust and confidence.

(2) "Illegal drugs," as used in this clause, means controlled substances included in Schedules I and II, as defined by section 802(6) of title 21 of the United States Code, the possession of which is unlawful under chapter 13 of that Title. The term "illegal drugs" does not mean the use of a controlled substance pursuant to a valid prescription or other uses authorized by law.

(b) The Contractor agrees to institute and maintain a program for achieving the objective of a drug-free work force. While this clause defines criteria for such a program, contractors are encouraged to implement alternative approaches comparable to the criteria in paragraph (c) that are designed to achieve the objectives of this clause.

(c) Contractor programs shall include the following, or appropriate alternatives:

(1) Employee assistance programs emphasizing high level direction, education, counseling, rehabilitation, and coordination with available community resources;

(2) Supervisory training to assist in identifying and addressing illegal drug use by Contractor employees;

(3) Provision for self-referrals as well as supervisory referrals to treatment with maximum respect for individual confidentiality consistent with safety and security issues;

(4) Provision for identifying illegal drug users, including testing on a controlled and carefully monitored basis. Employee drug testing programs shall be established taking account of the following:

(i) The Contractor shall establish a program that provides for testing for the use of illegal drugs by employees in sensitive positions. The extent of and criteria for such testing shall be determined by the Contractor based on considerations that include the nature of the work being performed under the contract, the employee's duties, and efficient use of Contractor resources, and the risks to health, safety, or national security that could result from the failure of an employee adequately to discharge his or her position.

(ii) In addition, the Contractor may establish a program for employee drug testing--

(A) When there is a reasonable suspicion that an employee uses illegal drugs; or

(B) When an employees has been involved in an accident or unsafe practice;

(C) As part of or as a follow-up to counseling or rehabilitation for illegal drug use;

(D) As part of a voluntary employee drug testing program.

(iii) The Contractor may establish a program to test applicants for employment for illegal drug use.

(iv) For the purpose of administering this clause, testing for illegal drugs may be limited to those substances for which testing is prescribed by section 2..1 of subpart B of the "Mandatory Guidelines for Federal Workplace Drug Testing Programs" (53 FR 11980 (April 11, 1988), issued by the Department of Health and Human Services.

(d) Contractors shall adopt appropriate personnel procedures to deal with employees who are found to be using drugs illegally. Contractors shall not allow any employee to remain on duty or perform in a sensitive position who is found to use illegal drugs until such times as the Contractor, in accordance with procedures established by the Contractor, determines that the employee may perform in such a position.

(e) The provisions of this clause pertaining to drug testing program shall not apply to the extent that are inconsistent with state or local law, or with an existing collective bargaining agreement; provided that with respect to the latter, the Contractor agrees those issues that are in conflict will be a subject of negotiation at the next collective bargaining session.

(End of clause)

252.223-7006 PROHIBITION ON STORAGE AND DISPOSAL OF TOXIC AND HAZARDOUS

MATERIALS (APR 1993)

(a) "Definitions".

As used in this clause --

(1) "Storage" means a non-transitory, semi-permanent or permanent holding, placement, or leaving of material. It does not include a temporary accumulation of a limited quantity of a material used in or a waste generated or resulting from authorized activities, such as servicing, maintenance, or repair of Department of Defense (DoD) items, equipment, or facilities.

(2) "Toxic or hazardous materials" means:

(i) Materials referred to in section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 U.S.C. 9601(14)) and materials designated under section 102 of CERCLA (42 U.S.C. 9602) (40 CFR part 302);

(ii) Materials that are of an explosive, flammable, or pyrotechnic nature; or

(iii) Materials otherwise identified by the Secretary of Defense as specified in DoD regulations.

(b) In accordance with 10 U.S.C. 2692, the Contractor is prohibited from storing or disposing of non-DoD-owned toxic or hazardous materials on a DoD installation, except to the extent authorized by a statutory exception to 10 U.S.C. 2692 or as authorized by the Secretary of Defense or his designee.

(End of clause)

252.225-7012 PREFERENCE FOR CERTAIN DOMESTIC COMMODITIES (APR 2002)

(a) Definitions. As used in this clause--

(1) Component means any item supplied to the Government as part of an end product or of another component.

(2) End product means supplies delivered under a line item of this contract.

(b) The Contractor shall deliver under this contract only such of the following items, either as end products or components, that have been grown, reprocessed, reused, or produced in the United States, its possessions, or Puerto Rico:

(1) Food.

(2) Clothing.

(3) Tents, tarpaulins, or covers.

(4) Cotton and other natural fiber products.

(5) Woven silk or woven silk blends.

(6) Spun silk yarn for cartridge cloth.

(7) Synthetic fabric, and coated synthetic fabric, including all textile fibers and yarns that are for use in such fabrics.

(8) Canvas products.

(9) Wool (whether in the form of fiber or yarn or contained in fabrics, materials, or manufactured articles).

(10) Any item of individual equipment (Federal Supply Class 8465) manufactured from or containing fibers, yarns, fabrics, or materials listed in this paragraph (b).

(c) This clause does not apply --

(1) To items listed in section 25.104(a) of the Federal Acquisition Regulation (FAR), or other items for which the Government has determined that a satisfactory quality and sufficient quantity cannot be acquired as and when needed at U.S. market prices;

(2) To end products incidentally incorporating cotton, other natural fibers, or wool, for which the estimated value of the cotton, other natural fibers, or wool--

(i) Is not more than 10 percent of the total price of the end product; and (ii) Does not exceed the simplified acquisition threshold in FAR part 2;

(3) To foods that have been manufactured or processed in the United States, its possessions, or Puerto Rico, regardless of where the foods (and any component if applicable) were grown or produced;

(4) To chemical warfare protective clothing produced in the countries listed in subsection 225.872-1 of the Defense FAR Supplement; or

(5) To fibers and yarns that are for use in synthetic fabric or coated synthetic fabric (but does apply to the synthetic or coated synthetic fabric itself), if--

(i) The fabric is to be used as a component of an end product that is not a textile product. Examples of textile products, made in whole or in part of fabric, include--

(A) Draperies, floor coverings, furnishings, and bedding (Federal Supply Group 72, Household and Commercial Furnishings and Appliances);

(B) Items made in whole or in part of fabric in Federal Supply Group 83, Textile/leather/furs/apparel/findings/tents/flags, or Federal Supply Group 84, Clothing, Individual Equipment and Insignia;

(C) Upholstered seats (whether for household, office, or other use); and

(D) Parachutes (Federal Supply Class 1670); or

(ii) The fibers and yarns are para-aramid fibers and yarns manufactured in the Netherlands.

(End of clause)

252.225-7014 PREFERENCE FOR DOMESTIC SPECIALTY METALS (MAR 1998)

(a) Definitions.

As used in this clause--

(1) Qualifying country means any country set forth in subsection 225.872-1 of the Defense Federal Acquisition Regulation Supplement.

(2) Specialty metals means--

(i) Steel--

(A) Where the maximum alloy content exceeds one or more of the following limits: manganese, 1.65 percent; silicon, 0.60 percent; or copper, 0.60 percent; or

(B) That contains more than 0.25 percent of any of the following elements: aluminum, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, or vanadium;

(ii) Metal alloys consisting of nickel, iron-nickel, and cobalt base alloys containing a total of other alloying metals (except iron) in excess of 10 percent;

(iii) Titanium and titanium alloys; or

(b) The Contractor agrees that any specialty metals incorporated in articles delivered under this contract will be melted in the United States, its possessions, or Puerto Rico.

(c) This clause does not apply to the extent that--

(1) The Secretary or designee determines that a satisfactory quality and sufficient quantity of such articles cannot be acquired when needed at U.S. market prices;

(2) The specialty metal is melted in a qualifying country or is incorporated in an article manufactured in a qualifying country;

(3) The acquisition is necessary to comply with agreements with foreign governments requiring the United States to purchase supplies from foreign sources to offset sales made by the U.S. Government or U.S. firms under approved programs; or

(4) The specialty metal is purchased by a subcontractor at any tier.

(End of clause)

252.225-7031 SECONDARY ARAB BOYCOTT OF ISRAEL (JUN 1992)

(a) Definitions. As used in this clause--

(1) "Foreign person" means any person other than a United States person as defined in Section 16(2) of the Export Administration Act of 1979 (50 U.S.C. App. Sec 2415).

(2) "United States person" is defined in Section 16(2) of the Export Administration Act of 1979 and means any United States resident or national (other than an individual resident outside the United States and employed by other than a United States person), any domestic concern (including any permanent domestic establishment of any foreign concern), and any foreign subsidiary or affiliate (including any permanent foreign establishment) of any domestic concern which is controlled in fact by such domestic concerns, as determined under regulations of the President.

(b) Certification. By submitting this offer, the Offeror, if a foreign person, company or entity, certifies that it--

(1) Does not comply with the Secondary Arab Boycott of Israel; and

(2) Is not taking or knowingly agreeing to take any action, with respect to the Secondary Boycott of Israel by Arab countries, which 50 U.S.C. App. Sec 2407(a) prohibits a United States person from taking.

(End of clause)

252.227-7033 *RIGHTS IN SHOP DRAWINGS (APR 1966)*

(a) Shop drawings for construction means drawings, submitted to the Government by the Construction Contractor, subcontractor or any lower-tier subcontractor pursuant to a construction contract, showing in detail (i) the proposed fabrication and assembly of structural elements and (ii) the installation (i.e., form, fit, and attachment details) of materials or equipment. The Government may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.

(b) This clause, including this paragraph (b), shall be included in all subcontracts hereunder at any tier.

252.231-7000 *SUPPLEMENTAL COST PRINCIPLES (DEC 1991)*

When the allowability of costs under this contract is determined in accordance with part 31 of the Federal Acquisition Regulation (FAR), allowability shall also be determined in accordance with part 231 of the Defense FAR Supplement, in effect on the date of this contract.

(End of clause)

252.236-7000 *MODIFICATION PROPOSALS - PRICE BREAKDOWN. (DEC 1991)*

(a) The Contractor shall furnish a price breakdown, itemized as required and within the time specified by the Contracting Officer, with any proposal for a contract modification.

- (b) The price breakdown --
 - (1) Must include sufficient detail to permit an analysis of profit, and of all costs for --
 - (i) Material;
 - (ii) Labor;
 - (iii) Equipment;
 - (iv) Subcontracts; and
 - (v) Overhead; and
 - (2) Must cover all work involved in the modification, whether the work was deleted, added, or changed.
- (c) The Contractor shall provide similar price breakdowns to support any amounts claimed for subcontracts.
- (d) The Contractor's proposal shall include a justification for any time extension proposed.

252.236-7001 *CONTRACT DRAWINGS, MAPS, AND SPECIFICATIONS (AUG 2000)*

- (a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.
- (b) The Contractor shall--
 - (1) Check all drawings furnished immediately upon receipt;
 - (2) Compare all drawings and verify the figures before laying out the work;
 - (3) Promptly notify the Contracting Officer of any discrepancies;
 - (4) Be responsible for any errors that might have been avoided by complying with this paragraph (b); and
 - (5) Reproduce and print contract drawings and specifications as needed.
- (c) In general--
 - (1) Large-scale drawings shall govern small-scale drawings; and
 - (2) The Contractor shall follow figures marked on drawings in preference to scale measurements.
- (d) Omissions from the drawings or specifications or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not

relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified on the following index of drawings:

Title	File	Drawings
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See Drawing Index: R-P-WB-00/004 and R-P-WB-00/005.

(End of clause)

252.236-7002 OBSTRUCTION OF NAVIGABLE WATERWAYS. (DEC 1991)

(a) The Contractor shall --

- (1) Promptly recover and remove any material, plant, machinery, or appliance which the contractor loses, dumps, throws overboard, sinks, or misplaces, and which, in the opinion of the Contracting Officer, may be dangerous to or obstruct navigation;
- (2) Give immediate notice, with description and locations of any such obstructions, to the Contracting Officer; and
- (3) When required by the Contracting Officer, mark or buoy such obstructions until the same are removed.

(b) The Contracting Officer may --

- (1) Remove the obstructions by contract or otherwise should the Contractor refuse, neglect, or delay compliance with paragraph (a) of this clause; and
- (2) Deduct the cost of removal from any monies due or to become due to the Contractor; or
- (3) Recover the cost of removal under the Contractor's bond.

(c) The Contractor's liability for the removal of a vessel wrecked or sunk without fault or negligence is limited to that provided in sections 15, 19, and 20 of the River and Harbor Act of March 3, 1899 (33 U.S.C. 410 et. seq.).

252.236-7008 CONTRACT PRICES - BIDDING SCHEDULES. (DEC 1991)

(a) The Government's payment for the items listed in the Bidding Schedule shall constitute full compensation to the Contractor for --

(1) Furnishing all plant, labor, equipment, appliances, and materials; and

(2) Performing all operations required to complete the work in conformity with the drawings and specifications.

(b) The Contractor shall include in the prices for the items listed in the Bidding Schedule all costs for work in the specifications, whether or not specifically listed in the Bidding Schedule.

252.242-7000 POSTAWARD CONFERENCE (DEC 1991)

The Contractor agrees to attend any postaward conference convened by the contracting activity or contract administration office in accordance with Federal Acquisition Regulation subpart 42.5.

(End of clause)

252.243-7001 PRICING OF CONTRACT MODIFICATIONS (DEC 1991)

When costs are a factor in any price adjustment under this contract, the contract cost principles and procedures in FAR part 31 and DFARS part 231, in effect on the date of this contract, apply.

252.243-7002 REQUESTS FOR EQUITABLE ADJUSTMENT (MAR 1998)

(a) The amount of any request for equitable adjustment to contract terms shall accurately reflect the contract adjustment for which the Contractor believes the Government is liable. The request shall include only costs for performing the change, and shall not include any costs that already have been reimbursed or that have been separately claimed. All indirect costs included in the request shall be properly allocable to the change in accordance with applicable acquisition regulations.

(b) In accordance with 10 U.S.C. 2410(a), any request for equitable adjustment to contract terms that exceeds the simplified acquisition threshold shall bear, at the time of submission, the following certificate executed by an individual authorized to certify the request on behalf of the Contractor:

I certify that the request is made in good faith, and that the supporting data are accurate and complete to the best of my knowledge and belief.

(Official's Name)

(Title)

(c) The certification in paragraph (b) of this clause requires full disclosure of all relevant facts, including--

(1) Cost or pricing data if required in accordance with subsection 15.403-4 of the Federal Acquisition Regulation (FAR); and

(2) Information other than cost or pricing data, in accordance with subsection 15.403-3 of the FAR, including actual cost data and data to support any estimated costs, even if cost or pricing data are not required.

(d) The certification requirement in paragraph (b) of this clause does not apply to----

(1) Requests for routine contract payments; for example, requests for payment for accepted supplies and services, routine vouchers under a cost-reimbursement type contract, or progress payment invoices; or

(2) Final adjustment under an incentive provision of the contract.

252.244-7000 SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS (DOD) (MAR 2000)

In addition to the clauses listed in paragraph (c) of the Subcontracts for Commercial Items and Commercial Components clause of this contract (Federal Acquisition Regulation 52.244-6), the Contractor shall include the terms of the following clauses, if applicable, in subcontracts for commercial items or commercial components, awarded at any tier under this contract:

252.225-7014 Preference for Domestic Specialty Metals, Alternate I (10 U.S.C. 2241 note).

252.247-7023 Transportation of Supplies by Sea (10 U.S.C. 2631).

252.247-7024 Notification of Transportation of Supplies by Sea (10 U.S.C. 2631).

(End of clause)

252.246-7000 MATERIAL INSPECTION AND RECEIVING REPORT (DEC 1991)

At the time of each delivery of supplies or services under this contract, the Contractor shall prepare and furnish to the Government a Material Inspection and Receiving Report in the manner and to the extent required by Appendix F, Material Inspection and Receiving Report, of the Defense FAR Supplement.

(End of clause)

252.247-7023 TRANSPORTATION OF SUPPLIES BY SEA (MAY 2002)

(a) Definitions. As used in this clause --

(1) "Components" means articles, materials, and supplies incorporated directly into end products at any level of manufacture, fabrication, or assembly by the Contractor or any subcontractor.

(2) "Department of Defense" (DoD) means the Army, Navy, Air Force, Marine Corps, and defense agencies.

- (3) "Foreign flag vessel" means any vessel that is not a U.S.-flag vessel.
- (4) "Ocean transportation" means any transportation aboard a ship, vessel, boat, barge, or ferry through international waters.
- (5) "Subcontractor" means a supplier, materialman, distributor, or vendor at any level below the prime contractor whose contractual obligation to perform results from, or is conditioned upon, award of the prime contract and who is performing any part of the work or other requirement of the prime contract.
- (6) "Supplies" means all property, except land and interests in land, that is clearly identifiable for eventual use by or owned by the DoD at the time of transportation by sea.
 - (i) An item is clearly identifiable for eventual use by the DoD if, for example, the contract documentation contains a reference to a DoD contract number or a military destination.
 - (ii) "Supplies" includes (but is not limited to) public works; buildings and facilities; ships; floating equipment and vessels of every character, type, and description, with parts, subassemblies, accessories, and equipment; machine tools; material; equipment; stores of all kinds; end items; construction materials; and components of the foregoing.
- (7) "U.S.-flag vessel" means a vessel of the United States or belonging to the United States, including any vessel registered or having national status under the laws of the United States.
 - (b)(1) The Contractor shall use U.S.-flag vessels when transporting any supplies by sea under this contract.
 - (2) A subcontractor transporting supplies by sea under this contract shall use U.S.-flag vessels if--
 - (i) This contract is a construction contract; or
 - (ii) The supplies being transported are--
 - (A) Noncommercial items; or
 - (B) Commercial items that--
 - (1) The Contractor is reselling or distributing to the Government without adding value (generally, the Contractor does not add value to items that it contracts for f.o.b. destination shipment);
 - (2) Are shipped in direct support of U.S. military contingency operations, exercises, or forces deployed in humanitarian or peacekeeping operations; or
 - (3) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.
- (c) The Contractor and its subcontractors may request that the Contracting Officer authorize shipment in foreign-flag vessels, or designate available U.S.-flag vessels, if the Contractor or a subcontractor believes that --
 - (1) U.S.-flag vessels are not available for timely shipment;
 - (2) The freight charges are inordinately excessive or unreasonable; or
 - (3) Freight charges are higher than charges to private persons for transportation of like goods.
- (d) The Contractor must submit any request for use of other than U.S.-flag vessels in writing to the Contracting

Officer at least 45 days prior to the sailing date necessary to meet its delivery schedules. The Contracting Officer will process requests submitted after such date(s) as expeditiously as possible, but the Contracting Officer's failure to grant approvals to meet the shipper's sailing date will not of itself constitute a compensable delay under this or any other clause of this contract. Requests shall contain at a minimum --

- (1) Type, weight, and cube of cargo;
 - (2) Required shipping date;
 - (3) Special handling and discharge requirements;
 - (4) Loading and discharge points;
 - (5) Name of shipper and consignee;
 - (6) Prime contract number; and
 - (7) A documented description of efforts made to secure U.S.-flag vessels, including points of contact (with names and telephone numbers) with at least two U.S.-flag carriers contacted. Copies of telephone notes, telegraphic and facsimile message or letters will be sufficient for this purpose.
- (e) The Contractor shall, within 30 days after each shipment covered by this clause, provide the Contracting Officer and the Maritime Administration, Office of Cargo Preference, U.S. Department of Transportation, 400 Seventh Street SW., Washington, DC 20590, one copy of the rated on board vessel operating carrier's ocean bill of lading, which shall contain the following information:
- (1) Prime contract number;
 - (2) Name of vessel;
 - (3) Vessel flag of registry;
 - (4) Date of loading;
 - (5) Port of loading;
 - (6) Port of final discharge;
 - (7) Description of commodity;
 - (8) Gross weight in pounds and cubic feet if available;
 - (9) Total ocean freight in U.S. dollars; and
 - (10) Name of the steamship company.
- (f) The Contractor shall provide with its final invoice under this contract a representation that to the best of its knowledge and belief--
- (1) No ocean transportation was used in the performance of this contract;
 - (2) Ocean transportation was used and only U.S.-flag vessels were used for all ocean shipments under the contract;

(3) Ocean transportation was used, and the Contractor had the written consent of the Contracting Officer for all non-U.S.-flag ocean transportation; or

(4) Ocean transportation was used and some or all of the shipments were made on non-U.S.-flag vessels without the written consent of the Contracting Officer. The Contractor shall describe these shipments in the following format:

ITEM DESCRIPTION	CONTRACT LINE ITEMS	QUANTITY
_____	_____	_____
_____	_____	_____
_____	_____	_____
TOTAL	_____	_____

(g) If the final invoice does not include the required representation, the Government will reject and return it to the Contractor as an improper invoice for the purposes of the Prompt Payment clause of this contract. In the event there has been unauthorized use of non-U.S.-flag vessels in the performance of this contract, the Contracting Officer is entitled to equitably adjust the contract, based on the unauthorized use.

(h) In the award of subcontracts for the types of supplies described in paragraph (b)(2) of this clause, the Contractor shall flow down the requirements of this clause as follows:

(1) The Contractor shall insert the substance of this clause, including this paragraph (h), in subcontracts that exceed the simplified acquisition threshold in part 2 of the Federal Acquisition Regulation.

(2) The Contractor shall insert the substance of paragraphs (a) through (e) of this clause, and this paragraph (h), in subcontracts that are at or below the simplified acquisition threshold in part 2 of the Federal Acquisition Regulation.

(End of clause)

252.247-7024 NOTIFICATION OF TRANSPORTATION OF SUPPLIES BY SEA (MAR 2000)

(a) The Contractor has indicated by the response to the solicitation provision, Representation of Extent of Transportation by Sea, that it did not anticipate transporting by sea any supplies. If, however, after the award of this contract, the Contractor learns that supplies, as defined in the Transportation of Supplies by Sea clause of this contract, will be transported by sea, the Contractor --

(1) Shall notify the Contracting Officer of that fact; and

(2) Hereby agrees to comply with all the terms and conditions of the Transportation of Supplies by Sea clause of this contract.

(b) The Contractor shall include this clause; including this paragraph (b), revised as necessary to reflect the relationship of the contracting parties--

- (1) In all subcontracts under this contract, if this contract is a construction contract; or
- (2) If this contract is not a construction contract, in all subcontracts under this contract that are for--
 - (i) Noncommercial items; or
 - (ii) Commercial items that--
 - (A) The Contractor is reselling or distributing to the Government without adding value (generally, the Contractor does not add value to items that it subcontracts for f.o.b. destination shipment);
 - (B) Are shipped in direct support of U.S. military contingency operations, exercises, or forces deployed in humanitarian or peacekeeping operations; or
 - (C) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.

(End of clause)

SECTION 00800 - Special Contract Requirements

CLAUSES INCORPORATED BY FULL TEXT

52.000-4004 PARTNERING

The Government proposes to form a partnering relationship with the contractor. This partnering relationship will strive to facilitate communication and draw on the strengths of each organization in an effort to achieve a quality project, within budget, and on schedule. Participation will be totally voluntary. Partnering will not alter or supersede any provision of this contract nor will it provide either party with any additional contractual rights or obligations. Participation in partnering will not affect award of this contract. Any cost associated with this partnering will be agreed to by both parties and will be shared equally, with no change in contract price.

52.212-4003 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER (OCT 1989) ER 415-1-15

a. This provision specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the CONTRACT CLAUSES: DEFAULT (FIXED-PRICE CONSTRUCTION). In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the contractor.

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY
WORKDAYS BASED ON (5) DAY WORKWEEK.

GEOGRAPHIC LOCATION -- Breckeridge (Wilkin County), Minnesota												
Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Days	18	13	7	4	4	5	4	3	3	2	5	14

c. Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled workday. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph b, above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the CONTRACT CLAUSES: DEFAULT (FIXED-PRICE CONSTRUCTION).

52.214-5000 ARITHMETIC DISCREPANCIES – EFARS

(a) For the purpose of initial evaluation of bids, the following will be utilized in resolving arithmetic discrepancies found on the face of bidding schedule as submitted by the bidder:

- (1) Obviously misplaced decimal points will be corrected;
- (c) Discrepancy between unit price and extended price, the unit price will govern;
- (d) Apparent errors in extension of unit prices will be corrected;
- (e) Apparent errors in addition of lump sum and extended prices will be corrected.

(b) For the purpose of bid evaluation, the government will proceed on the assumption that the bidder intends his bid to be evaluated on basis of the unit prices, the totals arrived at by resolution of arithmetic discrepancies as provided above and the bid will be so reflected on the abstract of bids.

(ii) These correction procedures shall not be used to resolve any ambiguity concerning which bid is low.

(End of statement)

52.228-4002 INSURANCE

As referenced in Contract Clause: INSURANCE--WORK ON A GOVERNMENT INSTALLATION, the following types and amounts of insurance are required under this contract.

Type	Amount
Worker's Compensation and Employer's Liability Insurance:	
Coverage A Worker's Compensation	Compliance with State of Minnesota Worker's Compensation Law
Coverage B Employer's Liability	\$ 100,000
General Liability Insurance:	
Bodily Injury	\$1,000,000 per occurrence
Property Damage	Not Required
Automobile Liability Insurance (Comprehensive Policy Form):	
Bodily Injury	\$ 500,000 per person and \$1,000,000 per occurrence
Property Damage	\$ 100,000 per occurrence

52.228-4022 REQUIREMENT FOR BID GUARANTEE (FAR 28.101-2)

Each bidder shall submit with its bid a Bid Bond (Standard Form 24) with good and sufficient surety or sureties acceptable to the Government or other security as provided in the clause BID GUARANTEE in the form of twenty percent (20%) of the bid price or \$3,000,000 whichever is lesser. The bid bond penalty may be expressed in terms of a percentage of the bid price or may be expressed in dollars and cents.

52.231-5000 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE

MAR 1995)—EFARS

(a) This clause does not apply to terminations. See 52.249-5000, Basis for Settlement of Proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual cost data for each piece of

equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule, Region IV. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet.
(End of clause)

52.232-4004 INVOICE PROCEDURES

In accordance with CONTRACT CLAUSE titled "PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS", the contractor shall submit invoices as follows:

a. In order to qualify for a periodic payment, the Contractor must submit a proper invoice (request for payment) to the Contracting Officer's Representative (COR) and a determination must be made that supplies or services conform to the contract requirements. This determination will be made for the sole purpose of processing progress payments and will not constitute formal acceptance. The due date for making progress payments shall be as stated in the contract clause: PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS.

b. The submitted request for payment must be accompanied with documentation adequate to substantiate the amount requested. Substantiation shall be consistent with the clauses in the solicitation titled Quantity Surveys, Purchase Orders, Invoices, etc. satisfactory to the COR.

c. The Contractor must also include with the payment request a certification as described in the Clause "PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS".

d. Payment requests will be reviewed for propriety by the COR. Defective invoices will be returned to the Contractor for resolution with defects identified. Along with the returned invoice, the COR may include, at its option, an ENG FORM 93-PAYMENT ESTIMATE reflecting the substantiated and uncontested payment amount. The Contractor will then be given the option of signing and returning the FORM 93 for payment along with the original invoice and certification or resubmitting a revised invoice and certification. To expedite payment, the Contractor may request in writing that the COR retain the defective invoice and immediately process the payment request at the amount determined to be acceptable to the Government.

52.232-5001 CONTINUING CONTRACTS (MAR 1995)—EFARS

(a) This is a continuing contract, as authorized by Section 10 of the River and Harbor Act of September 22, 1922 (33 U.S. Code 621). The payment of some portion of the contract price is dependent upon reservations of funds from future appropriations, and from future contribution to the project having one or more non-federal project sponsors. The responsibilities of the Government are limited by this clause notwithstanding any contrary provision of the "Payments to Contractor" clause or any other clause of this contract.

(b) The sum of \$1,300,000 has been reserved for this contract and is available for payments to the contractor during the current fiscal year. It is expected that Congress will make appropriations for future fiscal years from which additional funds together with funds provided by one or more non-federal project sponsors will be reserved for this contract.

(c) Failure to make payments in excess of the amount currently reserved, or that may be reserved from time to time, shall not entitle the contractor to a price adjustment under the terms of this contract except as specifically provided in paragraphs (f) and (i) below. No such failure shall constitute a breach of this contract, except that this provision shall not bar a breach-of-contract action if an amount finally determined to be due as a termination allowance remains unpaid for one year due solely to a failure to reserve sufficient additional funds therefore.

(d) The Government may at any time reserve additional funds for payments under the contract if there are funds available for such purpose. The contracting officer will promptly notify the contractor of any additional funds reserved for the contract by issuing an administrative modification to the contract.

(e) If earnings will be such that funds reserved for the contract will be exhausted before the end of any fiscal year, the contractor shall give written notice to the contracting officer of the estimated date of exhaustion and the amount of additional funds which will be needed to meet payments due or to become due under the contract during that fiscal year. This notice shall be given not less than 45 nor more than 60 days prior to the estimated date of exhaustion.

(f) No payments will be made after exhaustion of funds except to the extent that additional funds are reserved for the contract. The contractor shall be entitled to simple interest on any payment that the contracting officer determines was actually earned under the terms of the contract and would have been made except for exhaustion of funds. Interest shall be computed from the time such payment would otherwise have been made until actually or constructively made, and shall be at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41, 85 STAT 97, as in effect on the first day of the delay in such payment.

(g) Any suspension, delay, or interruption of work arising from exhaustion or anticipated exhaustion of funds shall not constitute a breach of this contract and shall not entitle the contractor to any price adjustment under the "Suspension of Work" clause or in any other manner under this contract.

(h) An equitable adjustment in performance time shall be made for any increase in the time required for performance of any part of the work arising from exhaustion of funds or the reasonable anticipation of exhaustion of funds.

(i) If, upon the expiration of sixty (60) days after the beginning of the fiscal year following an exhaustion of funds, the Government has failed to reserve sufficient additional funds to cover payments otherwise due, the contractor, by written notice delivered to the contracting officer at any time before such additional funds are reserved, may elect to treat his right to proceed with the work as having been terminated. Such a termination shall be considered a termination for the convenience of the Government.

(j) If at any time it becomes apparent that the funds reserved for any fiscal year are in excess of the funds required to meet all payments due or to become due the contractor because of work performed and to be performed under the contract during the fiscal year, the Government reserves the right, after notice to the contractor, to reduce said reservation by the amount of such excess.

(End of clause)

52.236-15 SCHEDULES FOR CONSTRUCTION CONTRACTS (APR 1984)

(a) The Contractor shall, within five days after the work commences on the contract or another period of time determined by the Contracting Officer, prepare and submit to the Contracting Officer for approval three copies of a practicable schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of the work (including acquiring materials, plant, and equipment). The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion by any given date during the period. If the Contractor fails to submit a schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments until the Contractor submits the required schedule.

(b) The Contractor shall enter the actual progress on the chart as directed by the Contracting Officer, and upon doing so shall immediately deliver three copies of the annotated schedule to the Contracting Officer. If, in the opinion of the Contracting Officer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve its progress, including those that may be required by the Contracting Officer, without additional cost to the Government. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules in chart form as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained.

(c) Failure of the Contractor to comply with the requirements of the Contracting Officer under this clause shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the default terms of this contract.

(End of clause)

52.236-4006 SAFETY AND HEALTH REQUIREMENTS MANUAL INTERIM CHANGES, EM 385-1-1 (APR 2001)

This paragraph applies to contracts and purchase orders that require the contractor to comply with EM 385-1-1 (e.g., contracts that include the Accident Prevention clause at FAR 52.236-13 and/or other safety provisions). EM 385-1-1 and its changes are available at <http://www.hq.usace.army.mil> (at the HQ homepage, select Safety and Occupational Health). The Contractor shall be responsible for complying with the current edition and all changes posted on the web as of the effective date of this solicitation.

52.236-4012 MATERIAL SOURCES

a. Concrete aggregate and stone protection materials meeting the requirements of these specifications can be produced from the sources listed in Section 00830 "Attachments":

b. Materials may be furnished from any of the listed sources or at the option of the Contractor may be furnished from any other sources designated by the Contractor and approved by the Contracting Officer, subject to the conditions hereinafter stated.

c. After the award of the contract, the Contractor shall designate in writing only one source for each type of material or one combination of sources from which he proposes to furnish the materials. If the Contractor proposes to furnish materials from a source or from sources not listed, he may designate only a single source for each type of material or single combination of sources for materials. Samples for acceptance testing shall be provided as required by the TECHNICAL PROVISIONS. If a source for materials so designated by the Contractor is not approved for use by the Contracting Officer, the Contractor may not submit for approval other sources but shall furnish the materials from approved sources selected from the list at no additional cost to the Government.

d. Approval of a source of materials is not to be construed as approval of all material from that source. The right is reserved to reject materials from certain localized areas, zones, strata, or channels, when such materials are unsuitable as determined by the Contracting Officer. Materials produced from an approved source shall meet all the requirements of the TECHNICAL PROVISIONS of these specifications.

52.236-4014 PURCHASE ORDERS

Two legible copies of each purchase order issued by the Contractor or the Contractor's subcontractors for materials and equipment to be incorporated into the project, shall be furnished the Contracting Officer as soon as issued. Each purchase order shall (1) be clearly identified with applicable Department of Army contract number, (2) carry and identifying number, (3) be in sufficient detail to identify the material being purchased, and (4) indicate a definite delivery date. At the option of the Contractor, the copies of the purchase orders may or may not indicate the price of the articles purchased.

52.239-4001 YEAR 2000 COMPLIANCE (FAR 39.106) (JUL 1998)

The contractor shall ensure that, with respect to any design, construction, goods, or services under this contract as well as any subsequent task/delivery orders issued under this contract (if applicable), all information technology contained therein shall be Year 2000 compliant. Specifically, the contractor shall perform, maintain, and provide an inventory of all major components to include structures, equipment, items, parts, and furnishings under this contract and each task/delivery order which may be affected by the Year 2000 compliance requirement.

52.246-4001 LABORATORY AND TESTING FACILITIES

The Contractor shall provide and maintain all measuring and testing devices, laboratory equipment, instruments, transportation, and supplies necessary to accomplish the required testing. All measuring and testing devices shall be calibrated at established intervals against certified standards. The Contractor's measuring and testing equipment shall be made available for use by the Government for verification of their accuracy and condition as well as for any inspection or test desired pursuant to SECTION 00700: INSPECTION OF CONSTRUCTION. The location of the laboratory shall be convenient to the site such that test results are available prior to proceeding with the next sequential phase of the work.

52.249-5000 BASIS FOR SETTLEMENT OF PROPOSALS

"Actual costs will be used to determine equipment costs for a settlement proposal submitted on the total cost basis under FAR 49.206-2(b). In evaluating a terminations settlement proposal using the total cost basis, the following principles will be applied to determine allowable equipment costs:

(1) Actual costs for each piece of equipment, or groups of similar serial or series equipment, need not be available in the contractor's accounting records to determine total actual equipment costs.

(2) If equipment costs have been allocated to a contract using predetermined rates, those charges will be adjusted to actual costs.

(3) Recorded job costs adjusted for unallowable expenses will be used to determine equipment operating expenses.

(4) Ownership costs (depreciation) will be determined using the contractor's depreciation schedule (subject to the provisions of FAR 31.205-11).

(5) License, taxes, storage and insurance costs are normally recovered as an indirect expense and unless the contractor charges these costs directly to contracts, they will be recovered through the indirect expense rate."

(End of Clause)

SECTION 00830

ATTACHMENTS

INDEX

ATTACHMENT	TITLE
1	WAGE RATES
2	MATERIAL SOURCES

ATTACHMENT 1

WAGE RATES

BRS Document Viewer
General Decision Number MN020059

General Decision Number MN020059

Superseded General Decision No. MN010059

State: Minnesota Construction Type:

HEAVY County(ies):

AITKIN	KANABEC	PENNINGTON
BECKER	KANDIYOHI	PINE
BELTRAMI	KITTSO	PIPESTONE
BIG STONE	KOOCHICHING	POPE
BLUE EARTH	LAC QUI PARLE	RED LAKE
BROWN	LAKE	REDWOOD
CARLTON	LAKE OF THE WOODS	RENVILLE
CASS	LE SUEUR	RICE
CHIPPEWA	LINCOLN	ROCK
CLEARWATER	LYON	ROSEAU
COOK	MAHNOMEN	SIBLEY
COTTONWOOD	MARSHALL	STEELE
CROW WING	MARTIN	STEVENS
DODGE	MCLEOD	SWIFT
DOUGLAS	MEEKER	TODD
FARIBAULT	MILLE LACS	TRAVERSE
FILLMORE	MORRISON	WABASHA
FREEBORN	MOWER	WADENA
GOODHUE	MURRAY	WASECA
GRANT	NICOLLET	WATONWAN
HUBBARD	NOBLES	WILKIN
ITASCA	NORMAN	WINONA
JACKSON	OTTER TAIL	YELLOW MEDICINE

HEAVY CONSTRUCTION PROJECTS (Does not include Water & Sewer Line
or Treatment Plants)

Modification Number	Publication Date
0	03/01/2002
1	05/03/2002
2	05/17/2002
3	06/14/2002
4	11/15/2002
5	12/06/2002

COUNTY(ies):

AITKIN	KANABEC	PENNINGTON
BECKER	KANDIYOHI	PINE
BELTRAMI	KITTSO	PIPESTONE
BIG STONE	KOOCHICHING	POPE
BLUE EARTH	LAC QUI PARLE	RED LAKE
BROWN	LAKE	REDWOOD
CARLTON	LAKE OF THE WOODS	RENVILLE
CASS	LE SUEUR	RICE
CHIPPEWA	LINCOLN	ROCK
CLEARWATER	LYON	ROSEAU
COOK	MAHNOMEN	SIBLEY
COTTONWOOD	MARSHALL	STEELE
CROW WING	MARTIN	STEVENS
DODGE	MCLEOD	SWIFT
DOUGLAS	MEEKER	TODD

FARIBAULT	MILLE LACS	TRAVERSE
FILLMORE	MORRISON	WABASHA
FREEBORN	MOWER	WADENA
GOODHUE	MURRAY	WASECA
GRANT	NICOLLET	WATONWAN
HUBBARD	NOBLES	WILKIN
ITASCA	NORMAN	WINONA
JACKSON	OTTER TAIL	YELLOW MEDICINE

ELEC0110J 05/01/2002

	Rates	Fringes
GOODHUE (West of Belle Creek, Minneola, Roscoe & Vasa Townships),		
KANABEC (South of Hillman, Peace & Pomroy Townships), LE SUEUR		
(East of Cleveland, Sharon, Tyrone & Washington Townships),		
MILLE LACS (South of Bradbury, Lewis & Onamia Townships), PINE		
(South of Arione, Barry, Clover, Hinckley & Ogema Townships) &		
RICE COUNTIES:		
ELECTRICIANS	29.45	28.5%+5.77
CABLE SPLICERS	30.45	28.5%+5.77

ELEC0242F 06/01/2002

	Rates	Fringes
AITKIN, CARLTON, CASS (Bounded on the north by the south line of		
Leech Lake, Minnesota Island, Could, Bay River & Salem		
Townships), COOK, CROW WING, HUBBARD (Except Rockwood, Helga,		
Farden, Lake Hattie, Schoolcraft, Guthrie, Hart Lake, Lake		
Alice, Lake George, Hendrickson & Lakeport), ITASCA (Southerly		
12 Townships, including Harris, Feely, Blackberry, Spang,		
Coodland, Sago & Wawina), KANABEC (Northern part, including		
Brook, Ford, Krosche, Hillman, Peace & Pomroy Townships), LAKE,		
MILLE LACS (Including Northerly Townships of Kathio, South		
Harbor, Isle, East Side, Onamia & Harbor), MORRISON, PINE		
(Excluding southerly Townships of Brook Park, Mission Creek,		
Munch, Crosby, Pokegama, Cross Lake, Chengwatana, Royalton,		
Rock Creek & Pine City), TODD & WADENA COUNTIES:		
ELECTRICIANS	26.14	49.5

* ELEC0292E 05/01/2002

	Rates	Fringes
BIG STONE, CHIPPEWA, KANDIYOHI, LAC QUI PARLE, MCLEOD, MEEKER,		
POPE, STEVENS & SWIFT COUNTIES:		
ELECTRICAL CONTRACTS \$500,000		
AND OVER:		
Electricians	27.04	13.29
Cable Splicers	28.04	13.78
ELECTRICAL CONTRACTS UNDER \$500,000:		
Electricians	25.67	12.46
Cable Splicers	26.67	12.95

ELEC0294G 06/01/2002

	Rates	Fringes
CASS (Northern part, bounded on the south by a line extending		
east & west of the south line of Boy River & Salem Townships),		
HUBBARD (Northern part, bounded on the south by a line extending		
east & west of the south line of Lake Alice & Lake George		
Townships) & KOOCHICHING COUNTIES		
ELECTRICIANS	26.09	44.5%
CABLE SPLICERS	26.64	44.5%

ELEC0294J 06/01/2002

	Rates	Fringes
BELTRAMI, CLEARWATER, ITASCA (Excluding the section south of a line extending east & west of the south line of Grand Rapids & Trout Lake Townships) & LAKE OF THE WOODS (Excluding the northwest angle) COUNTIES		
ELECTRICIANS:		
Electrical Installations Under \$3,000,000	20.48	3.91+27.5%
All Other Work:		
Electricians	26.09	44.5%
Cable Splicers	26.64	44.5%

ELEC0343J 06/01/2002

	Rates	Fringes
BLUE EARTH, BROWN, COTTONWOOD, DODGE, FARIBAULT, FILLMORE, FREEBORN, GOODHUE (Except that portion west of Belle Creek, Minneola, Roscoe & Vasa Townships), JACKSON, LE SUEUR (Cleveland, Le Sueur, Ottawa, Sharon, Tyrone, Washington & Kasota Townships), LINCOLN, LYON, MARTIN, MOWER, NICOLLET, REDWOOD, RENVILLE, SIBLEY, STEELE, WABASHA, WASECA, WATONWAN, WINONA & YELLOW MEDICINE COUNTIES:		
ELECTRICIAN	24.72	15%+8.27
CABLE SPLICER	25.72	15%+8.27

ELEC0426E 06/01/1999

	Rates	Fringes
MURRAY, NOBLES, PIPESTONE & ROCK COUNTIES: 0 TO 10 MILES FROM THE CITIES OF ABERDEEN & WATERTOWN, SOUTH DAKOTA; & WORTHINGTON, MINNESOTA; AND 0 TO 70 MILES FROM SIOUX FALLS, SOUTH DAKOTA:		
ELECTRICIANS	19.00	6.105
CABLE SPLICERS	20.90	6.34
BEYOND THE AFOREMENTIONED AREAS:		
ELECTRICIANS	21.40	6.405
CABLE SPLICERS	23.54	6.67

ELEC1426I 06/01/2002

	Rates	Fringes
BECKER, DOUGLAS, GRANT, KITTSO, MAHNOMEN, MARSHALL, NORMAN, OTTER TAIL, PENNINGTON, RED LAKE, ROSEAU, TRAVERSE & WILKIN COUNTIES		
ELECTRICIANS	20.57	12%+6.20
CABLE SPLICERS	21.60	12%+6.20

ENGI0049W 05/01/2002

	Rates	Fringes
COOK & LAKE COUNTIES		
POWER EQUIPMENT OPERATORS:		
GROUP 1	26.27	8.45
GROUP 2	25.72	8.45
GROUP 3	25.54	8.45
GROUP 4	25.42	8.45
GROUP 5	22.38	8.45
GROUP 6	21.17	8.45
POWER EQUIPMENT OPERATOR CLASSIFICATIONS		

GROUP 1 - *Crane with over 135' Boom, excluding Jib; & Hydraulic Backhoe and/or other similar equipment with Shovel-type Controls 3 cu. yds. & over Mfg. rated Cap.

GROUP 2 - Hydraulic Backhoe and/or similar equipment with Shovel-type Controls, up to 3 cu. yds. Mfg. rated cap.; Front End Loader, 5 cu. yds. & over; Locomotive Crane; Master Mechanic; Tandem Scraper; Tractor - Boom type; & Truck Crane - Crawler Crane

GROUP 3 - Dual Tractor; & Scraper - Struck Cap. 32 cu. yds. & over

GROUP 4 - Bituminous Roller (8 Tons & over); Cat Tractor with Rock Wagon or similar type; Front End Loader, over 1 cu. yd.; Mechanic; Rubber-tired Farm Tractor, Backhoe Attach.; Scraper, up to 32 cu. yds.; Skid Steer Loader, over 1 cu. yd. with Backhoe Attachment; Tractor, Bulldozer; Tractor Operator, over 50 HP with Power Take-off; & Dismantling or Repair Mechanic

GROUP 5 - Bituminous Roller (Under 8 tons); Bituminous Rubber-tired Roller; Front End Loader, up to & incl. 1 cu. yd.; Loader (Barber Greene or similar type); & Tractor Operator, Bulldozer, 50 HP or less

GROUP 6 - Mechanic Tender; Mechanic, Space Heater (Temporary Heat); Roller on Gravel Compaction; Sheep Foot Roller; Tractor, Wheel type (over 50 HP); & Truck Crane Oiler

CRANE OVER 135' BOOM, EXCLUDING JIB - \$.25 PREMIUM;

CRANE OVER 200' BOOM, EXCLUDING JIB - \$.50 PREMIUM

UNDERGROUND WORK:

TUNNELS, SHAFTS, ETC. - \$.25 PREMIUM

UNDER AIR PRESSURE - \$.50 PREMIUM

HAZARDOUS WASTE PROJECTS (PPE Required):

LEVEL A - \$1.25 PREMIUM

LEVEL B - \$.90 PREMIUM

LEVEL C - \$.60 PREMIUM

ENGI1049S 05/01/2002

	Rates	Fringes
AITKIN, BLUE EARTH, CARLTON, CASS (South of the northern right-of-way of U.S. Hwy #2 & east of the western right-of-way of U.S. Hwy #371), CROW WING (East of the western right-of-way of U.S. Hwy #371), DODGE, FARIBAULT, FILLMORE, FREEBORN, GOODHUE, ITASCA (East of the western right-of-way of Minnesota Hwy #6), KANABEC, KOOCHICHING (East of a north-south line from the Canadian border to Pelland, the western right-of-way of U.S. Hwy #71 from Pelland to Big Falls & Minnesota Hwy #6), LE SUEUR, MILLE LACS, MORRISON (East of the western right-of-way of U.S. Hwy #371 & U.S. Hwy #10 from Little Falls to the Morrison-Benton County line), MOWER, PINE, RICE, STEELE, WABASHA, WASECA & WINONA COUNTIES; & BROWN, MCLEOD, MARTIN, MEEKER, NICOLLET, SIBLEY & WATONWAN COUNTIES (East of the western right-of-way of Minnesota Hwy #15)		

POWER EQUIPMENT OPERATORS:

GROUP 1	24.06	8.45
GROUP 2	23.61	8.45
GROUP 3	23.44	8.45
GROUP 4	23.31	8.45
GROUP 5	20.74	8.45
GROUP 6	19.87	8.45

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1 - *Crane with over 135' Boom, excluding Jib; & Hydraulic

Backhoe and/or other similar equipment with Shovel-type Controls
 3 cu. yds. & over Mfg. rated Cap.
 GROUP 2 - Hydraulic Backhoe and/or similar equipment with Shovel-
 type Controls, up to 3 cu. yds. Mfg. rated cap.; Front End
 Loader, 5 cu. yds. & over; Locomotive Crane; Master Mechanic;
 Tandem Scraper; Tractor - Boom type; & Truck Crane - Crawler
 Crane
 GROUP 3 - Dual Tractor; & Scraper - Struck Cap. 32 cu. yds. &
 over
 GROUP 4 - Bituminous Roller (8 Tons & over); Cat Tractor with
 Rock Wagon or similar type; Front End Loader, over 1 cu. yd.;
 Mechanic; Rubber-tired Farm Tractor, Backhoe Attach.; Scraper, up
 to 32 cu. yds.; Skid Steer Loader, over 1 cu. yd. with Backhoe
 Attachment; Tractor, Bulldozer; Tractor Operator, over 50 HP with
 Power Take-off; & Dismantling or Repair Mechanic
 GROUP 5 - Bituminous Roller (Under 8 tons); Bituminous Rubber-
 tired Roller; Front End Loader, up to & incl. 1 cu. yd.; Loader
 (Barber Greene or similar type); & Tractor Operator, Bulldozer,
 50 HP or less
 GROUP 6 - Mechanic Tender; Mechanic, Space Heater (Temporary
 Heat); Roller on Gravel Compaction; Sheep Foot Roller; Tractor,
 Wheel type (over 50 HP); & Truck Crane Oiler
 CRANE OVER 135' BOOM, EXCLUDING JIB - \$.25 PREMIUM;
 CRANE OVER 200' BOOM, EXCLUDING JIB - \$.50 PREMIUM
 UNDERGROUND WORK:
 TUNNELS, SHAFTS, ETC. - \$.25 PREMIUM
 UNDER AIR PRESSURE - \$.50 PREMIUM
 HAZARDOUS WASTE PROJECTS (PPE Required):
 LEVEL A - \$1.25 PREMIUM
 LEVEL B - \$.90 PREMIUM
 LEVEL C - \$.60 PREMIUM

 ENGI1049T 05/01/2002

	Rates	Fringes
BECKER, BELTRAMI, BIG STONE, CASS (Excluding area south of the northern right-of-way of U.S. Hwy #2 & east of the western right-of-way of U.S. Hwy #371), CHIPPEWA, CLEARWATER, COTTONWOOD, CROW WING (Excluding area east of the western right-of-way of U.S. Hwy #371), DOUGLAS, GRANT, HUBBARD, ITASCA (Excluding area east of the western right-of-way of Minnesota Hwy #6), JACKSON, KANDIYOHI, KITTSO, KOCHICHING (Excluding area east of a north- south line from the Canadian border to Pelland, the western right-of-way of U.S. Hwy #71 from Pelland to Big Falls & Minnesota Hwy #6), LAC QUI PARLE, LAKE OF THE WOODS, LINCOLN, LYON, MAHNOHEN, MARSHALL, MORRISON (Excluding area east of the western right-of-way of U.S. Hwy #371 & U.S. Hwy #10 from Little Falls to the Morrison-Benton County line), MURRAY, NOBLES, NORMAN, OTTER TAIL, PENNINGTON, PIPESTONE, POPE, RED LAKE, REDWOOD, RENVILLE, ROCK, ROSEAU, STEVENS, SWIFT, TODD, TRAVERSE, WADENA, WILKIN & YELLOW MEDICINE COUNTIES; & BROWN, MCLEOD, MARTIN, MEEKER, NICOLLET, SIBLEY & WATONWAN COUNTIES (Excluding the area east of the western right-of-way of Minnesota Hwy #15):		
POWER EQUIPMENT OPERATORS:		
GROUP 1	21.65	8.45
GROUP 2	20.72	8.45
GROUP 3	20.52	8.45
GROUP 4	20.41	8.45

GROUP 5	18.70	8.45
GROUP 6	18.10	8.45

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1 - *Crane with over 135' Boom, excluding Jib; & Hydraulic Backhoe and/or other similar equipment with Shovel-type Controls 3 cu. yds. & over Mfg. rated Cap.

GROUP 2 - Hydraulic Backhoe and/or similar equipment with Shovel-type Controls, up to 3 cu. yds. Mfg. rated cap.; Front End Loader, 5 cu. yds. & over; Locomotive Crane; Master Mechanic; Tandem Scraper; Tractor - Boom type; & Truck Crane - Crawler Crane

GROUP 3 - Dual Tractor; & Scraper - Struck Cap. 32 cu. yds. & over

GROUP 4 - Bituminous Roller (8 Tons & over); Cat Tractor with Rock Wagon or similar type; Front End Loader, over 1 cu. yd.; Mechanic; Rubber-tired Farm Tractor, Backhoe Attach.; Scraper, up to 32 cu. yds.; Skid Steer Loader, over 1 cu. yd. with Backhoe Attachment; Tractor, Bulldozer; Tractor Operator, over 50 HP with Power Take-off; & Dismantling or Repair Mechanic

GROUP 5 - Bituminous Roller (Under 8 tons); Bituminous Rubber-tired Roller; Front End Loader, up to & incl. 1 cu. yd.; Loader (Barber Greene or similar type); & Tractor Operator, Bulldozer, 50 HP or less

GROUP 6 - Mechanic Tender; Mechanic, Space Heater (Temporary Heat); Roller on Gravel Compaction; Sheep Foot Roller; Tractor, Wheel type (over 50 HP); & Truck Crane Oiler

CRANE OVER 135' BOOM, EXCLUDING JIB - \$.25 PREMIUM;

CRANE OVER 200' BOOM, EXCLUDING JIB - \$.50 PREMIUM

UNDERGROUND WORK:

TUNNELS, SHAFTS, ETC. - \$.25 PREMIUM

UNDER AIR PRESSURE - \$.50 PREMIUM

HAZARDOUS WASTE PROJECTS (PPE Required):

LEVEL A - \$1.25 PREMIUM

LEVEL B - \$.90 PREMIUM

LEVEL C - \$.60 PREMIUM

IRON0184D 05/01/2002		
	Rates	Fringes
JACKSON, LINCOLN, MARTIN, MURRAY, NOBLES, PIPESTONE & ROCK COUNTIES		
IRONWORKERS	17.91	6.565

IRON0512L 05/01/2002		
	Rates	Fringes
BIG STONE, BLUE EARTH, BROWN, CHIPPEWA, COTTONWOOD, DODGE, DOUGLAS, FARIBAULT, FILLMORE, FREEBORN, GOODHUE, GRANT, KANABEC, KANDIYOHI, LAC QUI PARLE, LE SUEUR, LYON, MCLEOD, MEEKER, MILLE LACS, MORRISON, MOWER, NICOLLET, OTTER TAIL, POPE, REDWOOD, RENVILLE, RICE, SIBLEY, STEELE, STEVENS, SWIFT, TODD, TRAVERSE, WABASHA, WADENA, WASECA, WATONWAN, WINONA & YELLOW MEDICINE COUNTIES		
IRONWORKERS	29.50	11.84

IRON0563K 05/01/2002		
	Rates	Fringes
AITKIN, BECKER, BELTRAMI, CARLTON, CASS, CLEARWATER, COOK, CROW-WING, HUBBARD, ITASCA, KOCHICHING, LAKE, LAKE OF THE WOODS,		

MAHNOMEN, PENNINGTON, PINE, RED LAKE & ROSEAU COUNTIES

IRONWORKERS	23.78	12.70
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IRON0793E 05/01/2002

	Rates	Fringes
KITTSOON, MARSHALL, NORMAN & WILKIN COUNTIES		
IRONWORKERS	19.14	9.73

LABO0405F 05/01/2002

	Rates	Fringes
BLUE EARTH, BROWN, DODGE, FARIBAULT, FILLMORE, FREEBORN, GOODHUE, LE SUEUR, MOWER, NICOLLET, RICE, STEELE, WABASHA, WASECA AND WINONA COUNTIES		

LABORERS:

Flagger, Pipelayer	19.59	5.76
Tunnel	20.29	5.76

LABO0563L 05/01/2002

	Rates	Fringes
AITKIN, BECKER, BELTRAMI, BIG STONE, CASS, CHIPPEWA, CLEARWATER, COTTONWOOD, CROW WING, DOUGLAS, GRANT, HUBBARD, JACKSON, KANDIYOHI, KITTSOON, KOOSCHICHING, LAC QUI PARLE, LAKE OF THE WOODS, LINCOLN, LYON, MAHNOMEN, MARSHALL, MARTIN, MCLEOD, MEEKER, MORRISON, MURRAY, NOBLES, NORMAN, OTTER TAIL, PENNINGTON, PIPESTONE, POPE, RED LAKE, REDWOOD, RENVILLE, ROCK, ROSEAU, SIBLEY, STEVENS, SWIFT, TODD, TRAVERSE, WADENA, WATONWAN, WILKIN AND YELLOW MEDICINE COUNTIES		

LABORERS:

Flagger, Pipelayer	15.74	5.21
Tunnel	16.44	5.21

LABO0563M 05/01/2002

	Rates	Fringes
KANABEC & MILLE LACS COUNTIES		
LABORERS:		
Flagger, Pipelayer	18.54	5.86
Tunnel	19.24	5.86

LABO0563N 05/01/2002

	Rates	Fringes
PINE COUNTY		
LABORERS:		
Flagger, Pipelayer	22.89	6.21
Tunnel	23.59	6.21

LABO1091H 05/01/2002

	Rates	Fringes
CARLTON, COOK & LAKE COUNTIES		
LABORERS:		
Flagger, Pipelayer	22.17	5.96
Tunnel	22.87	5.96

LABO1097M 05/01/2002

	Rates	Fringes
ITASCA COUNTY		
LABORERS:		
Flagger, Pipelayer	21.62	6.51

Tunnel	22.32	6.51
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* PLUM0006D 08/01/2002

	Rates	Fringes
DODGE, FARIBAULT, FILLMORE, FREEBORN, GOODHUE (Southern half), MOWER, RICE, STEELE, WABASHA, WASECA & WINONA COUNTIES		
PIPEFITTERS	29.71	9.35

PLUM0011G 05/01/2001

	Rates	Fringes
CARLTON, COOK (A strip 20 miles inland along the shores of Lake Superior), KANABEC, LAKE (A strip 20 miles inland along the shores of Lake Superior) & PINE COUNTIES		
PIPEFITTERS	26.35	9.15

PLUM0126D 05/15/2002

	Rates	Fringes
AITKIN, BECKER, BELTRAMI, CASS (Southern half), CLEARWATER, CROW WING, DOUGLAS, GRANT, HUBBARD, KITTSON, LAKE OF THE WOODS, MAHNOMEN, MARSHALL, NORMAN, OTTER TAIL, PENNINGTON, RED LAKE, ROSEAU, TRAVERSE, WADENA & WILKIN COUNTIES:		
PIPEFITTERS:		
Mechanical Projects under \$2,000,000	25.89	8.31
Mechanical Projects \$2,000,000 and above	28.29	8.31

PLUM0455E 05/01/2002

	Rates	Fringes
GOODHUE COUNTY (Northern half)		
PIPEFITTERS	31.22	10.64

PLUM0455K 05/01/2002

	Rates	Fringes
BLUE EARTH, BROWN, COTTONWOOD, JACKSON, LE SUEUR, LINCOLN, LYON, MARTIN, MURRAY, NICOLLET, NOBLES, PIPESTONE, REDWOOD, RENVILLE, ROCK, SIBLEY & WATONWAN COUNTIES		
PIPEFITTERS	24.84	10.70

PLUM0539E 05/01/2002

	Rates	Fringes
MCLEOD & MILLE LACS COUNTIES		
PIPEFITTERS	31.30	10.70

PLUM0539J 05/01/2002

	Rates	Fringes
BIG STONE, CHIPPEWA, KANDIYOHI, LAC QUI PARLE, MEEKER, MORRISON, POPE, STEVENS, SWIFT, TODD & YELLOW MEDICINE COUNTIES		
PIPEFITTERS	24.71	13.03

PLUM0589D 06/01/2002

	Rates	Fringes
CASS (North of a parallel line drawn from the northern boundary of Crow Wing County, west to the east boundary of Wadena County), COOK (Except a strip 20 miles inland along the shores of Lake Superior), ITASCA KOOCHICHING, & LAKE (Except a strip 20 miles inland		

along the shores of Lake Superior) COUNTIES:

PIPEFITTERS	24.56	12.13
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SUMN2001B 07/08/1994

	Rates	Fringes
CARPENTERS	13.73	2.55
LABORERS:		
Unskilled	12.33	3.18
Landscape Work	5.15	
PAINTERS, Steel	19.42	4.72
POWER EQUIPMENT OPERATORS:		
Dragline	13.41	3.95
Grader	12.03	2.84

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor

200 Constitution Avenue, N. W.

Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board

U. S. Department of Labor

200 Constitution Avenue, N. W.

Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

ATTACHMENT 2

MATERIAL SOURCES

Breckenridge, MN

MATERIAL SOURCES (Stone Protection)

The following sources are approved for Riprap, Bedding, and Rockfill:

QUARRY NAME AND OPERATOR	QUARRY LOCATION	NOTES
Ortonville Stone Company P. O. Box 67 Ortonville MN 56278 (Crushed Rock)	S 1/2, Sec 6, T121N, R46W Bigstone County, MN	(1)
Rollog Pit Aggregate Industries, Inc P.O. Box 1036 Moorhead, MN 56561 (Fieldstone)	SE 1/4, Sec 31, T138N, R43W Becker County, MN	(1)

(1) Mixing fieldstone and crushed rock will not be allowed.

MATERIAL SOURCES (Fine and Coarse Concrete Aggregate)

The Contractor shall be responsible for locating sources of Concrete Aggregate conforming to ASTM C-33.

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01000

GENERAL

PART 1 GENERAL

- 1.1 ORGANIZATION OF SPECIFICATIONS
- 1.2 REFERENCES
- 1.3 SUBMITTALS
- 1.4 DESCRIPTION OF WORK
- 1.5 MEASUREMENT AND PAYMENT

PART 2 PRODUCTS

- 2.1 APPROVAL OF MATERIALS OR ALTERNATES
- 2.2 WARRANTIES

PART 3 EXECUTION

- 3.1 GROUNDS AND ROADWAYS
 - 3.1.1 Availability of Grounds
 - 3.1.2 Drainage Facilities
 - 3.1.3 Roadways
 - 3.1.3.1 Traffic hazards
 - 3.1.3.2 Haul routes
 - 3.1.3.3 Road Closures
- 3.2 DISPOSAL OF DEBRIS AND WASTE
 - 3.2.1 Disposal offsite for useful purposes
 - 3.2.2 Disposal in a locally operated sanitary landfill
 - 3.2.3 Disposal of Solid Construction Debris and Waste
- 3.3 PERMITS
 - 3.3.1 MnDOT Permit
- 3.4 EXISTING UTILITIES
 - 3.4.1 General
 - 3.4.2 Buried Utilities
 - 3.4.3 Interruption of Services
 - 3.4.4 Minnesota One Call Excavation Notice System
- 3.5 SCHEDULING
 - 3.5.1 General
 - 3.5.2 Notification
 - 3.5.3 Bridge Construction and Road Closure
- 3.6 CONSTRUCTION RESTRICTIONS
 - 3.6.1 Blasting
 - 3.6.2 Protection of Trees
 - 3.6.2.1 Restoration of Damaged Trees
 - 3.6.3 Pavement Removal and Replacement
 - 3.6.4 Load Restrictions

- 3.7 OTHER CONTRACTS
- 3.8 SHORING
 - 3.8.1 General
 - 3.8.2 Responsibility
 - 3.8.3 Removal
- 3.9 DEWATERING OPERATIONS
 - 3.9.1 Scope
 - 3.9.2 Payment
 - 3.9.3 Requirements
 - 3.9.3.1 Design
 - 3.9.3.2 Regulations
 - 3.9.3.3 Operation
 - 3.9.3.4 Removal
 - 3.9.4 Geologic Information
 - 3.9.5 Specific Requirements for Wells
 - 3.9.5.1 Screens
 - 3.9.5.2 Setback
 - 3.9.5.3 Roads and Levees
 - 3.9.6 Dewatering Plan
 - 3.9.7 Liability
 - 3.9.8 Related Work
- 3.10 SURVEYS
 - 3.10.1 Field Layout
 - 3.10.1.1 Alignment Changes
 - 3.10.2 Utility As-builts
 - 3.10.3 Quantity surveys
 - 3.10.4 Section and Quarter Monuments

-- End of Section Table of Contents --

SECTION 01000

GENERAL

PART 1 GENERAL

1.1 ORGANIZATION OF SPECIFICATIONS

The specifications which govern the materials and equipment to be furnished and the work to be performed under this contract are listed in the Table of Contents. No attempt has been made in the specifications to segregate work to be performed by any trade, craft, or subcontractor. Any segregation between the trades or crafts shall be solely a matter for agreement between the Contractor, Contractor's employees, and subcontractors.

1.2 REFERENCES

Reference to the standards, specifications, or codes of any technical society, organization, or association, or local, state, or Federal authority shall mean the specific edition or revision listed.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Dewatering plan;

The submittal requirements are described in PARAGRAPH: DEWATERING OPERATIONS.

Shoring plan;

The submittal requirements are described in PARAGRAPH: SHORING.

SD-11 Closeout Submittals

Utility As-Builts;

The Utility As-Builts are described under PARAGRAPH: SURVEYS.

1.4 DESCRIPTION OF WORK

This project consists of construction of approximately three miles of

diversion channel with associated inlet weir, side inlet structures, riprap installation, and outlet. Three single span concrete bridges will cross Highways 75 and 210 and County Road 16 along with associated road work on the approach sections. A concrete drop structure will be constructed along County Road 16 entering the diversion channel. The existing sanitary sewer force main on the south side of Highway 210 will be relocated. Work includes all related grading, site restoration, and stockpiling for future projects.

1.5 MEASUREMENT AND PAYMENT

The Contractor shall be responsible for the work of this section, without any direct compensation being made other than the payment received for contract line items on the bidding schedule.

PART 2 PRODUCTS

2.1 APPROVAL OF MATERIALS OR ALTERNATES

Requests for approval of materials and products, or substitutes thereof, will not be considered prior to award of the contract.

2.2 WARRANTIES

Any items that are submitted for review or approval of the Contracting Officer should include a copy of the manufacturer's standard warranty if one is available.

PART 3 EXECUTION

3.1 GROUNDS AND ROADWAYS

3.1.1 Availability of Grounds

The boundary limits of the grounds made available for the Contractor's use during the life of the contract are shown on the drawings. Any additional rights-of-way or grounds desired by the Contractor shall be obtained by the Contractor at its own expense, and copies of agreements for the use of such rights-of-way shall be furnished to the Contracting Officer before entering thereon. Such agreements shall clearly relieve the Government of any responsibility for damages resulting from the use of the grounds.

3.1.2 Drainage Facilities

Insofar as natural drainage from the protected areas is obstructed by contract operations, it shall be the Contractor's responsibility to make adequate provision for accommodating such drainage in a satisfactory manner during the life of this contract, either by temporary means or by use of the permanent construction and operation of the permanent facilities.

3.1.3 Roadways

3.1.3.1 Traffic hazards

When continuous haul operations or other condition created by the Contractor's operations result in interference or hazard to traffic on streets and highways, beyond that of ordinary public usage, the Contractor shall erect warning signs and provide flagging services as necessary to safeguard the public as required in SECTION 01500 TEMPORARY CONSTRUCTION FACILITIES.

3.1.3.2 Haul routes

The Contractor shall be responsible for securing all permits required along haul routes. The Contractor shall be the sole permittee and shall be responsible for meeting all obligations of the permits. A copy of each permit shall be submitted to the Contracting Officer. The Contractor, as between the Government and the Contractor, has sole responsibility for damage or deterioration of the Contractor's haul routes. Dust control shall be provided as stated in SECTION 01355 ENVIRONMENTAL PROTECTION.

3.1.3.3 Road Closures

The Contractor shall be responsible for coordinating road closures and detours with the appropriate jurisdictions.

3.2 DISPOSAL OF DEBRIS AND WASTE

The Contractor's attention is directed to Section 01355 ENVIRONMENTAL PROTECTION and to the following Contract Clauses: PERMITS AND RESPONSIBILITIES; PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS; OPERATIONS AND STORAGE AREAS; and CLEANING UP. Burning will not be permitted at the project site and debris or waste shall not be left on the site. Disposal of clearing and grubbing debris shall be by one of the following methods:

3.2.1 Disposal offsite for useful purposes

In the interest of conservation, it is required that the Contractor make a reasonable effort to dispose of the material offsite for some useful purpose. Timber may be cut into convenient lengths and utilized for making saw logs, posts, cordwood, wood chips for paper making or other uses, or other similar use.

3.2.2 Disposal in a locally operated sanitary landfill

Contractor shall select the disposal site with the approval of the Contracting Officer. The Contractor shall secure the required permits for disposal and provide copies of the permit to the Contracting Officer.

3.2.3 Disposal of Solid Construction Debris and Waste

Disposal of Solid Construction Debris and Waste shall consist of removal from Government property and disposal in compliance with Federal, state, and local requirements for solid waste disposal. Contractor shall select the disposal site with the approval of the Contracting Officer.

3.3 PERMITS

The Contractor's attention is directed to Contract Clause: PERMITS AND RESPONSIBILITIES.

3.3.1 MnDOT Permit

The Contractor is required to obtain Utility Permit 4A-UL-2002-131 authorizing work on MnDOT right-of-way. The Contractor shall follow all permit requirements including special provisions. The Contractor shall pay all costs associated with obtaining the permit including providing the required surety. For additional information concerning this permit, bidders may contact:

Jim Utecht
Property Management
Division of Field Operations
218-847-1587

3.4 EXISTING UTILITIES

3.4.1 General

The Contractor shall coordinate all utility relocation requirements and make payment to the utility companies for all services, fees, and permits required to relocate and reestablish service. The Contractor shall be responsible for all costs related to protecting existing utilities. The Contractor shall coordinate with the utility representatives listed below:

Shal Telephone

Pete Johnson
9938 Highway 55 NW
Annandale, MN 55302-0340
(763) 658-4800

Breckenridge Public Utilities

Jeff Muehler
420 Nebraska Avenue
PO Box 410
Breckenridge, MN 56520-0410
(218) 643-4681

Ottertail Power Co.

Geri Coyne
2111 15th Street North
Wahpeton, ND 58030
(701) 642-6684

Lake Region Rural Electric Coop

David Weaklend
12 5th Avenue NE
PO Box W
Pelican Rapids, MN 56572-0643

Lake Region Rural Electric Coop
(218) 863-1171

Great Plains Natural Gas
Gary Salvalvold
705 W Fir
Fergus Falls, MN 56537
(218) 739-9772 Shop
(218) 736-6935 Office

Sprint
Dan Hilliard
849 Earl Street
St Paul, MN 55106
(651) 772-6714

Qwest
Greg Syversen
409 1st Ave No.
1st Floor
Fargo, ND 58102
(701) 241-3600

3.4.2 Buried Utilities

The approximate locations of known existing buried utilities are shown on the drawings to the extent of available information at the time the drawings were prepared. (In general, no service connections are shown.) Prior to commencing excavation, the Contractor shall accurately locate all such installations. In the event the Contractor damages any existing utility lines, report thereof shall be made immediately to the Contracting Officer. If the Contracting Officer determines that repairs shall be made by the Contractor, such repairs shall be performed immediately at no additional cost to the Government.

3.4.3 Interruption of Services

Utility services shall not be interrupted except for brief periods to facilitate cut-ins. The Contractor shall provide temporary service and shall relocate existing utilities as required to construct the work shown and insure uninterrupted service. If interruption of services is unavoidable, the Contractor shall request approval in writing at least 30 calendar days prior to the proposed interruption. This submittal shall fully describe all details of proposed interruption and the reasons why alternatives are not feasible. The Contractor shall further coordinate with the owner of the utility and notify affected consumers at least 10 calendar days in advance of interruption of services. The Contracting Officer will not in general approve proposals which require interruption of services for more than 4 continuous hours.

3.4.4 Minnesota One Call Excavation Notice System

For contract work performed within the State of Minnesota, the Contractor

shall meet the requirements of Minnesota Statutes, Chapter 216D "One Call Excavation Notice System." The Gopher State One Call notification center telephone numbers are:

Metro area	(651) 454-0002
Outstate	(800) 252-1166

3.5 SCHEDULING

3.5.1 General

It shall be the responsibility of the Contractor to schedule and execute the work, incorporating the necessary requirements set forth in these specifications. The Contractor shall develop and submit a schedule in accordance with Contract Clause SCHEDULES FOR CONSTRUCTION CONTRACTS.

3.5.2 Notification

The Contractor shall inform the Government in writing within 5 days after receipt of notice to proceed and before work begins as to which hours of the day and days of the week work under this contract will be performed. The Contractor shall notify the Government at least 24 hours before work is to be conducted on overtime, in multiple shifts, on weekends, or on Federal Government holidays.

3.5.3 Bridge Construction and Road Closure

A general detour plan is included in the project Plan sheets. Detouring requirements dictate that County Road 16 remain open while bridge construction is being done on Highways 210 and 75. No work that impacts County Road 16 is to start until the Highway 210 and 75 bridges, and related roadways, are open to traffic. Highways 210 and 75 must remain open during bridge construction on County Road 16.

3.6 CONSTRUCTION RESTRICTIONS

3.6.1 Blasting

Blasting will not be permitted.

3.6.2 Protection of Trees

Trees to be protected shall be determined and staked by the Contracting Officer. The following measures shall be implemented for tree protection and shall be addressed in the Environmental Protection Plan required under Section 01355 ENVIRONMENTAL PROTECTION.

- a. The trees shall be protected from wounds to the bark and foliage.
- b. The critical root zone shall be protected from compaction and grading.
- c. Changes in temporary site drainage and ponding shall be minimized to the extent possible that it effects the protected trees.

The critical root zone of trees designated to be protected shall be

surrounded by a high visibility fence 4 feet in height, supplied and erected by the Contractor. The critical root zone shall be defined by an area extending 1.5 feet radius from each tree for each inch of Diameter at Breast Height (DBH). The fence shall be securely erected and installed prior to any movement through the project site by construction vehicles or equipment, and remain in place until construction and clean-up are completed. The critical root zone shall remain free of all construction activities including trenching, staging, stockpiling and storage of materials. Vehicles and equipment shall not drive or park within the critical root zone. Variation to the critical root zone size or configuration will only be permitted where it is absolutely necessary for construction of the project, and requires approval of the Contracting Officer. Short duration alterations of the critical root zone involving wood chips and limited equipment travel shall be submitted in writing for approval.

The Contractor shall not operate equipment in vegetated areas outside the work limits.

3.6.2.1 Restoration of Damaged Trees

Any existing tree designated to be protected that is damaged by the Contractor's operations shall be replaced. Trees will be considered damaged if the critical root zone in cohesive soils is compacted, if there are significant wounds that could contribute to rot, or if distress (evident by reduced growth or other observations of distress documented by a forester) is observed prior to closing the contract. Trees shall be replaced in kind on a caliper inch per caliper inch basis (DBH) (i.e. one 6-inch red oak shall be replaced with two 3-inch red oaks, three 2-inch red oaks, or six 1-inch red oaks). Replacement trees shall be planted in accordance with accepted industry standards and guaranteed with the Contractor's standard warranty. Replacement tree size and location will be determined and staked by the Contracting Officer. Repair by pruning, aeration, soil conditioning, or other recommendation from a qualified forester will be considered as substitution for replacement by the Contracting Officer.

3.6.3 Pavement Removal and Replacement

Where roads are cut, removed, or otherwise damaged in the prosecution of the work the Contractor shall replace all pavements or other surfacings so removed or damaged to their preconstruction condition. After backfill is completed on paved streets, a temporary surface shall be laid down and the street opened to the traffic in order to provide access to abutting property. Restoration of the original street surface construction shall be completed no later than 60 calendar days after starting excavation. Should weather conditions preclude the restoration of the original surface material, temporary resurfacing utilizing a bituminous mixture shall be installed with the final surface constructed no later than June 1 of the following construction season.

3.6.4 Load Restrictions

The Contractor shall abide by all load restrictions imposed by State and

Local agencies during the course of construction.

3.7 OTHER CONTRACTS

The Contractor shall coordinate with other contractors in the performance of the work and schedule such work to provide for a minimum of delays and interferences. Coordination shall be through the Contracting Officer. No separate contracts are scheduled to be awarded at this time. If the Contracting Officer deems additional contracts necessary, these contracts will be considered in the application of Contract Clause OTHER CONTRACTS.

3.8 SHORING

3.8.1 General

At locations where shoring is not specifically required by the contract documents to safeguard adjacent structures, the Contractor may at its own option employ shoring for protecting work areas within excavations in lieu of performing excavation to safe and stable side slopes. The Contractor shall construct all shoring required in performing the excavations. Shoring shall be constructed in accordance with the safety requirements of EM 385-1-1.

3.8.2 Responsibility

The Contractor shall be responsible for design and maintenance of all shoring which the Contractor proposes to install. Plans and design computations for all shoring used shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES at least 30 days prior to installation.

3.8.3 Removal

Unless otherwise authorized, all sheeting and bracing shall be removed when backfill is completed.

3.9 DEWATERING OPERATIONS

3.9.1 Scope

The Contractor shall design, furnish, install and operate dewatering systems in conjunction with associated cofferdams, shoring, and other related work. Surface drainage shall be controlled by rerouting storm water runoff or diverting natural drainage, as necessary.

3.9.2 Payment

No separate payment will be made for dewatering on this project and compensation for all dewatering operations will be included in the respective contract items to which the work pertains.

3.9.3 Requirements

Control of groundwater shall be accomplished in a manner that will provide suitable working conditions for construction, preserve the strength of the

foundation soils, will not cause instability of excavations, and will not result in damage to existing structures. Suitable working conditions for construction will provide a dry or moist subgrade free of standing, percolating, or running water during placement and curing of concrete, and placement and compaction of backfill. Where necessary to these purposes, the water level shall be lowered in advance of excavation utilizing wells, wellpoints, or similar methods. For structure foundations, the water level (as measured in piezometers) shall be maintained a minimum of 1 foot below the prevailing excavation level, or it shall be lowered to within 2 feet of impermeable stratigraphy.

3.9.3.1 Design

If conditions warrant, and if not otherwise specified in the contract documents, dewatering may consist of collection in sumps or trenches, and open pumping. Sumps, trenches and running water shall not jeopardize erosion or ground loss near foundations, pipes, or other structures. Open pumping will not be permitted if it results in boils, seepage in concrete placement areas, loss of fines, softening of the ground, instability of slopes, or interference with orderly progress of the construction.

3.9.3.2 Regulations

Compliance with all regulations shall be incidental to the dewatering work. Disposal of water shall be in accordance with SECTION 01355 ENVIRONMENTAL PROTECTION and all applicable regulations. Well abandonment shall seal aquifers and confining layers in compliance with environmental regulations and permits.

3.9.3.3 Operation

Upon installation and commencement of dewatering operations, the system shall be operated continuously (24 hours/day, 7 days/week) until the structure and backfill are completed to the groundwater elevation. The Contractor shall be responsible for maintaining the system.

3.9.3.4 Removal

Upon completion of the work, well casing and screens shall be withdrawn, and all equipment shall be removed (including related temporary cofferdams, shoring, etc.)

3.9.4 Geologic Information

Ground water elevations shown on the boring logs are those encountered at the time the borings were taken. Because groundwater elevations are dependent upon hydrologic conditions, variations in the water table should be expected. For work near rivers and navigable waterways, refer to the hydrographs included with the contract drawings. It shall be the Contractors responsibility to perform the necessary dewatering operations irrespective of the water elevations at the time of the work. However, nothing in this clause prohibits the Contractor from receiving a time extension under the Default clause, the Time Extensions for Unusually Severe Weather clause, or any other clause in this contract.

3.9.5 Specific Requirements for Wells

3.9.5.1 Screens

Wells and wellpoints shall be installed with suitable screens and filters so that continuous pumping of fines does not occur. Pumps shall discharge into a settling tank to check for movement of sand.

3.9.5.2 Setback

The following criteria shall be followed to the maximum extent possible. Where permanent site features restrict placement of dewatering devices, the Contracting Officer will allow a variance. Wellpoints shall be located a minimum horizontal distance away from structures (existing and proposed) equal to the depth of penetration below foundation elevation. Wells larger than 3 inches diameter shall be located a minimum horizontal distance away from structures equal to the depth of penetration below foundation elevation plus half the depth of penetration above foundation elevation.

3.9.5.3 Roads and Levees

Wells larger than 3 inches diameter shall not be jetted through roadway and levee embankments. Wells larger than 3 inches diameter located on the up gradient side of levees, dikes, dams or floodwalls shall be screened without a gravel filter pack. These wells shall be abandoned by plugging the hole with a cement-bentonite grout. The screens shall include a loose end cap to allow removal of screen and casing without hole collapse.

3.9.6 Dewatering Plan

A dewatering plan shall be submitted for each area or phase of the contract where wells, wellpoints, or related systems are required. The plan shall be reviewed and signed by a Registered Professional Engineer. The plan shall include the following items:

1. layout (including the relationship to site improvements and construction operations)
2. type, sizes, depth and spacing of dewatering devices
3. number and capacity of pumps
4. design assumptions, analysis methods, and calculations
 - 4A. justification for pump capacity
 - 4B. justification for slot size on screens
 - 4C. justification for screen intake area
 - 4D. justification for filter pack gradation
5. description of installation equipment
6. description of operating procedures
7. description of discharge point (weirs, sedimentation basin, etc.)
8. type and location of monitoring equipment
9. removal and abandonment plans

3.9.7 Liability

Government review of the proposed dewatering system will not relieve the

Contractor of full responsibility for the adequacy of the dewatering operations. The Contractor shall be responsible for dewatering effects on adjacent properties, including but not limited to blockage of easements, erosion or sedimentation of ditches, and encroachment onto private property by flooding from pump outlets and sedimentation basins.

3.9.8 Related Work

Shoring, trench support systems, cofferdams and diversion structures shall be coordinated with the dewatering effort to provide safe and reliable conditions.

3.10 SURVEYS

3.10.1 Field Layout

The Contractor shall layout the work from the Government established bench marks in accordance with Contract Clause LAYOUT OF WORK. The construction of each feature of work shall follow the alignments as indicated on the drawings. The Contractor shall have in place, at least 7 calendar days prior to commencing construction operations, sufficient stakes and markings to enable the Contracting Officer to observe the field layout of the alignment and limits of each feature of work. For each feature of work, these stakes shall define areal limits such that the Contracting Officer can easily determine, without additional surveys, if alignment and/or limit adjustments need to be made. For embankments, levees, floodwalls, and similar work, these stakes shall define centerline, stationing, outermost fill/cut limits, and work limits. For buildings and similar work, the building corners and grid lines shall be staked. General site work shall be staked to define staging areas, storage areas, and other area limits as directed. The Contracting Officer may waive these requirements for certain areas. The layout shall be sufficient for the Contracting Officer to mark trees, vegetation and other features to be left undisturbed. No work shall take place without approval of field layout by the Contracting Officer.

3.10.1.1 Alignment Changes

The Government reserves the right to make changes in the alignment of any feature of work as may be found necessary during the course of the contract. If it becomes necessary, through no fault of the Contractor, to abandon a line, location or feature on which work has been done, an equitable adjustment for completed work will be made. No alignment changes or abandonment shall take place without prior written notice from the Contracting Officer.

3.10.2 Utility As-builts

An as-built field survey of all utilities shall be conducted after installation to determine the final locations and elevations of all utility structures such as manholes, catch basins, hydrants, gate valves, cleanouts, service connections, and other special controls or structures. Final elevations shall be determined for all sewer inverts and castings. Locations shall be shown using the same convention as the original contract drawings (typically stationing and offset from known centerline). If no

convention is used in the contract drawings, locations shall be tied to at least 2 permanent landmarks.

3.10.3 Quantity surveys

The Contractor shall perform quantity and tolerance verification surveys for all features of work in accordance with Contract Clause QUANTITY SURVEYS--ALTERNATE I. Unless changed by the Contracting Officer, the Contractor shall provide cross sections at 100 foot intervals to verify the required section. Areas where payment for material is specified by volume, and/or weight, shall be surveyed by the Contractor, prior to commencement of construction of each feature and upon completion of each feature, in enough detail to accurately determine quantities and verify the required section. The Contractor shall also plot each cross section from the survey notes at a scale of 1" = 10' and provide a copy of the survey notes and cross sections to the Contracting Officer within 10 days after completion of the survey.

3.10.4 Section and Quarter Monuments

The Contractor will be responsible for care, maintenance, rehabilitation and restoration of any monument(s) occupied or disturbed during the construction of diversion channels, levees and roadways for the Project. Monuments that are damaged or removed shall be replaced at no cost to the Government.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

- 1.1 SUBMITTALS
- 1.2 LUMP SUM PAYMENT ITEMS
 - 1.2.1 General Demolition
 - 1.2.1.1 Unit of Measure
 - 1.2.2 Traffic Control
 - 1.2.2.1 Unit of Measure
 - 1.2.3 Temporary Erosion Protection
 - 1.2.3.1 Unit of Measure
 - 1.2.4 Side Inlet Structures (A, B, C, D, and E)
 - 1.2.4.1 Payment
 - 1.2.4.2 Unit of Measure
 - 1.2.5 County Road 16 Culvert Crossing
 - 1.2.5.1 Unit of Measure
 - 1.2.6 Driveway Culvert Near Diversion Inlet
 - 1.2.6.1 Unit of Measure
 - 1.2.7 Highway 210 Bridge
 - 1.2.7.1 Payment
 - 1.2.7.2 Unit of Measure
 - 1.2.8 County Road 16 Bridge
 - 1.2.8.1 Payment
 - 1.2.8.2 Unit of Measure
 - 1.2.9 Highway 75 Bridge
 - 1.2.9.1 Payment
 - 1.2.9.2 Unit of Measure
 - 1.2.10 Clearing and Grubbing
 - 1.2.10.1 Payment
 - 1.2.10.2 Unit of Measure
 - 1.2.11 Forcemain Removal
 - 1.2.11.1 Payment
 - 1.2.11.2 Unit of Measure
 - 1.2.12 Forcemain
 - 1.2.12.1 Payment
 - 1.2.12.2 Unit of Measure
 - 1.2.13 Interior Drainage Ditching
 - 1.2.13.1 Payment
 - 1.2.13.2 Unit of Measure
 - 1.2.14 County Road 16 Drop Structure
 - 1.2.14.1 Payment
 - 1.2.14.2 Unit of Measure

- 1.2.15 Exterior Signage
 - 1.2.15.1 Payment
 - 1.2.15.2 Unit of Measure
- 1.2.16 Bonding
 - 1.2.16.1 Payment
 - 1.2.16.2 Unit of Measure
- 1.3 UNIT PRICE PAYMENT ITEMS
 - 1.3.1 Highway 210 and 75 Pavement Removal
 - 1.3.1.1 Payment
 - 1.3.1.2 Unit of Measure
 - 1.3.2 County Road 16 Pavement Removal
 - 1.3.2.1 Payment
 - 1.3.2.2 Unit of Measure
 - 1.3.3 Sheetpile
 - 1.3.3.1 Payment
 - 1.3.3.2 Measurement
 - 1.3.3.3 Unit of Measure
 - 1.3.4 4-inch Perforated HDPE Pipe
 - 1.3.4.1 Payment
 - 1.3.4.2 Unit of Measure
 - 1.3.5 Subgrade Preparation
 - 1.3.5.1 Payment
 - 1.3.5.2 Unit of Measure
 - 1.3.6 Geotextile Fabric (Roads)
 - 1.3.6.1 Payment
 - 1.3.6.2 Unit of Measure
 - 1.3.7 Select Granular Borrow
 - 1.3.7.1 Payment
 - 1.3.7.2 Unit of Measure
 - 1.3.8 Aggregate Base, Class V
 - 1.3.8.1 Payment
 - 1.3.8.2 Unit of Measure
 - 1.3.9 Pavement Marking
 - 1.3.9.1 Payment
 - 1.3.9.2 Measurement
 - 1.3.9.3 Unit of Measure
 - 1.3.10 Bituminous Tack and Prime Coats
 - 1.3.10.1 Payment
 - 1.3.10.2 Unit of Measure
 - 1.3.11 Bituminous Base
 - 1.3.11.1 Payment
 - 1.3.11.2 Unit of Measure
 - 1.3.12 Bituminous Wear Course
 - 1.3.12.1 Payment
 - 1.3.12.2 Unit of Measure
 - 1.3.13 Shouldering Aggregate
 - 1.3.13.1 Payment
 - 1.3.13.2 Unit of Measure
 - 1.3.14 Concrete Pavement
 - 1.3.14.1 Payment
 - 1.3.14.2 Unit of Measure
 - 1.3.15 Riprap (R6, R7, R8, R12)
 - 1.3.15.1 Payment
 - 1.3.15.2 Unit of Measure

- 1.3.15.3 Deductions
- 1.3.16 Bedding (B1 and B2)
 - 1.3.16.1 Payment
 - 1.3.16.2 Unit of Measure
 - 1.3.16.3 Deductions
- 1.3.17 Geotextile Fabric (Riprap)
 - 1.3.17.1 Payment
 - 1.3.17.2 Measurement
 - 1.3.17.3 Unit of Measure
- 1.3.18 Bridge Piling
 - 1.3.18.1 Payment
 - 1.3.18.2 Measurement
 - 1.3.18.3 Unit of Measure
- 1.3.19 Bridge Test Piles
 - 1.3.19.1 Payment
 - 1.3.19.2 Measurement
 - 1.3.19.3 Unit of Measure
- 1.3.20 Common Excavation
 - 1.3.20.1 Payment
 - 1.3.20.2 Measurement
 - 1.3.20.3 Unit of Measure
- 1.3.21 Compacted Fill and Semi-Compacted Fill
 - 1.3.21.1 Payment
 - 1.3.21.2 Measurement
 - 1.3.21.3 Unit of Measure
- 1.3.22 Stripping
 - 1.3.22.1 Payment
 - 1.3.22.2 Measurement
 - 1.3.22.3 Unit of Measure
- 1.3.23 Topsoil
 - 1.3.23.1 Payment
 - 1.3.23.2 Measurement
 - 1.3.23.3 Unit of Measure
- 1.3.24 Seed with Fertilizer and Mulch
 - 1.3.24.1 Payment
 - 1.3.24.2 Measurement
 - 1.3.24.3 Unit of Measure
- 1.3.25 Forcemain Gate Valves
 - 1.3.25.1 Payment
 - 1.3.25.2 Measurement
 - 1.3.25.3 Unit of Measure
- 1.3.26 Haul and Stockpile Excess Topsoil
 - 1.3.26.1 Payment
 - 1.3.26.2 Measurement
 - 1.3.26.3 Unit of Measure

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section Table of Contents --

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Weight Certificates

Submit certified weight certificates for riprap, bituminous base and wearing course, shouldering aggregate, aggregate base, and bedding.

SD-02 Shop Drawings

Quantity Surveys

1.2 LUMP SUM PAYMENT ITEMS

Payment items for the work of this contract for which contract lump sum payments will be made are listed in the BID SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular lump sum or unit price payment item, shall be included in the listed lump sum item most closely associated with the work involved. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

1.2.1 General Demolition

Payment will be made for costs associated with general demolition on the project site. Work shall include, but is not limited to, removal, disposal, and restoration of existing structures to the extent outlined in the contract drawings as well as any miscellaneous demoliton necessary to properly construct the project.

1.2.1.1 Unit of Measure

Unit of measure: lump sum.

1.2.2 Traffic Control

Payment will be made for costs associated with any traffic control measures required for this project. Work shall include, but is not limited to, detour and job signage, flag persons, jersey barriers, pilot vehicles, and maintenance of these control measures through the project.

1.2.2.1 Unit of Measure

Unit of measure: lump sum.

1.2.3 Temporary Erosion Protection

Payment will be made for costs associated with measures required to ensure compliance with all permitting requirements and those measures required by the contract documents. Work shall include, but is not limited to, measures such as silt fencing, control of runoff, temporary seeding, etc.

1.2.3.1 Unit of Measure

Unit of measure: lump sum.

1.2.4 Side Inlet Structures (A, B, C, D, and E)

1.2.4.1 Payment

Payment will be made for costs associated with operations necessary for construction of the interior drainage (side inlet) structures. Work includes, but is not limited to installation of culverts, maintenance holes, headwalls, out structures, flap gates, excavation, and backfill with select granular borrow associated with these structures. Restoration of roads, driveways, fences, and field entrances is incidental to the price bid. No allowances will be made for maintaining drainage from agricultural fields during interruptions in construction.

1.2.4.2 Unit of Measure

Unit of measure: lump sum.

1.2.5 County Road 16 Culvert Crossing

Payment will be made for costs associated with operations necessary for construction of the culvert crossing. Work includes, but is not limited to installation of culvert, flared end sections, flap gates, excavation, and backfill with coarse filter aggregate associated with this structure. Restoration of roads, driveways, fences, and field entrances is incidental to the price bid. No allowances will be made for maintaining drainage from agricultural fields during interruptions in construction.

1.2.5.1 Unit of Measure

Unit of measure: lump sum.

1.2.6 Driveway Culvert Near Diversion Inlet

Payment will be made for costs associated with operations necessary for construction of the culvert. Work includes, but is not limited to installation of culvert, flared end sections, flap gates, excavation, and backfill with coarse filter aggregate associated with this structure. Restoration of roads, driveways, fences, and field entrances is incidental to the price bid. No allowances will be made for maintaining drainage from agricultural fields during interruptions in construction.

1.2.6.1 Unit of Measure

Unit of measure: lump sum.

1.2.7 Highway 210 Bridge

1.2.7.1 Payment

Payment will be made for costs associated with operations necessary for construction of the bridge at Minnesota Highway 210 near Station 124+00. Work shall include, but is not limited to, structure excavation, backfill, related road work within 20 feet of bridge, asphalt pavement, bridge abutments, bridge girders, bridge decking, bridge guard rail, and concrete wing walls. Channel excavation is not included.

1.2.7.2 Unit of Measure

Unit of measure: lump sum.

1.2.8 County Road 16 Bridge

1.2.8.1 Payment

Payment will be made for costs associated with operations necessary for construction of the bridge at County Road 16 near Station 68+00. Work shall include, but is not limited to structure excavation, backfill, related road work within 20 feet of bridge, asphalt pavement, bridge abutments, bridge girders, bridge decking, bridge guard rail, and concrete wing walls. Channel excavation is not included.

1.2.8.2 Unit of Measure

Unit of measure: lump sum.

1.2.9 Highway 75 Bridge

1.2.9.1 Payment

Payment will be made for costs associated with operations necessary for construction of the bridge at Minnesota Highway 75 near Station 34+50. Work shall include, but is not limited to structure excavation, backfill, related road work within 20 feet of bridge, asphalt pavement, bridge abutments, bridge girders, bridge decking, bridge guard rail, and concrete

wing walls. Channel excavation is not included.

1.2.9.2 Unit of Measure

Unit of measure: lump sum.

1.2.10 Clearing and Grubbing

1.2.10.1 Payment

Payment will be made for all costs associated with clearing and grubbing as outlined in the project documents. Material that can be salvaged shall be stored for later use. Debris shall be properly disposed. No allowances will be made for clearing and grubbing outside the limits of construction unless authorized.

1.2.10.2 Unit of Measure

Unit of measure: lump sum.

1.2.11 Forcemain Removal

1.2.11.1 Payment

Payment will be made for all work and costs associated with removal of the existing force main identified in the contract documents. Work includes all items necessary to remove and dispose of the required length of existing pipe.

1.2.11.2 Unit of Measure

Unit of measure: lump sum.

1.2.12 Forcemain

1.2.12.1 Payment

Payment will be made for all work and costs associated with replacement of the existing force main section identified in the contract documents. Work includes all material and labor associated with installation of new piping in accordance with the contract documents including, but not limited to, trench excavation, bedding, backfill, joints, structural support, tie-in with existing, insulation, testing, cathodic protection, air release valves, maintenance holes, temporary bypass, directional drilling and site restoration. Gate valves are a separate bid item.

1.2.12.2 Unit of Measure

Unit of measure: lump sum.

1.2.13 Interior Drainage Ditching

1.2.13.1 Payment

Payment will be made for all costs associated with grading interior drainage to ensure existing fields drain toward the channel side inlet structures. All cut and fill associated with ensuring proper drainage will be considered incidental to this pay item. These areas are denoted on the plan as "grade to drain."

1.2.13.2 Unit of Measure

Unit of measure: lump sum.

1.2.14 County Road 16 Drop Structure

1.2.14.1 Payment

Payment will be made for costs associated with operations necessary for construction of the drop structure at County Road 16 near Station 65+00. Work shall include, but is not limited to, excavation, backfill including Select Granular Borrow (modified), installation of guardrails, and dewatering as needed.

1.2.14.2 Unit of Measure

Unit of measure: lump sum.

1.2.15 Exterior Signage

1.2.15.1 Payment

Payment will be made for all costs associated with supplying and installing permanent project signage as specified in the contract documents.

1.2.15.2 Unit of Measure

Unit of measure: lump sum.

1.2.16 Bonding

1.2.16.1 Payment

Payment will be made for the costs associated with obtaining bid, performance and payment bonds in accordance with the contract requirements.

1.2.16.2 Unit of Measure

Unit of measure: lump sum.

1.3 UNIT PRICE PAYMENT ITEMS

Payment items for the work of this contract on which the contract unit price payments will be made are listed in the BID SCHEDULE and described below. The unit price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports,

and for performing all work required for each of the unit price items.

Materials paid for by weight will be measured by weighing each truck load on approved scales before being placed in the work. Scales shall be of sufficient length to permit simultaneous weighing of all axle loads and shall be sensitive to a change in load of 0.2 percent throughout the range of the scales. The scale's accuracy shall conform to the applicable requirements of NIST HB 44 and shall be certified by scale servicing company or by an inspector of the State Inspection Bureau. Each load shall be accompanied by a delivery ticket certified by the weighmaster. Delivery tickets shall be collected by the Contractor, and copies thereof shall be furnished to the Contracting Officer. As a minimum, each ticket shall contain the following information:

- (1) Date and time.
- (2) Vehicle number.
- (3) Gross weight.
- (4) Vehicle tare weight.
- (5) Net weight.
- (6) Job total for material weighed.
- (7) Signature of weighmaster.

1.3.1 Highway 210 and 75 Pavement Removal

1.3.1.1 Payment

Payment will be made for all costs associated with the removal and disposal of the existing pavement structure to the extent shown on the drawings for Highways 210 and 75. Removal includes all bituminous, concrete, and aggregate to the depth shown in the contract documents. Proper disposal of material shall be at an approved site and in accordance with all laws and regulations. Except for authorized over-depth excavation, materials removed outside the lines and grades shown will not be measured for payment.

1.3.1.2 Unit of Measure

Unit of measure will be per square yard of surface removed to the depth specified in the contract documents.

1.3.2 County Road 16 Pavement Removal

1.3.2.1 Payment

Payment will be made for all costs associated with the removal and disposal of the existing pavement structure to the extent shown on the drawings for County Road 16. Removal includes all concrete and aggregate to the depth shown in the contract documents. Proper disposal of material shall be at an approved site and in accordance with all laws and regulations. Except for authorized over-depth excavation, materials removed outside the lines and grades shown will not be measured for payment.

1.3.2.2 Unit of Measure

Unit of measure will be per square yard of surface removed to the depth

specified in the contract documents.

1.3.3 Sheetpile

1.3.3.1 Payment

Payment for sheet piling quantities will be made at the applicable contract price per square foot for furnished and installed sheet piling. Payment shall cover all cost of furnishing, handling, storing and installing piling including placing, driving, cutting holes and other materials and work incident thereto.

1.3.3.2 Measurement

The area of sheet piling installed will be measured to the nearest square foot.

1.3.3.3 Unit of Measure

Unit of measure: square foot.

1.3.4 4-inch Perforated HDPE Pipe

1.3.4.1 Payment

Payment will be made for all costs associated with the installation of 4-inch perforated HDPE pipe properly installed in the subdrainage level of the pavement structure. Work will include all pipe, bedding, filter fabric, and outlet structure required per the contract documents.

1.3.4.2 Unit of Measure

Unit of measure: linear foot.

1.3.5 Subgrade Preparation

1.3.5.1 Payment

Payment will be made for all costs associated with grading, shaping, scarifying, compacting and general preparation of the subgrade to meet the compaction and design requirements of the contract.

1.3.5.2 Unit of Measure

Unit of measure: square yard.

1.3.6 Geotextile Fabric (Roads)

1.3.6.1 Payment

Payment will be made at the contract unit price for acceptable quantities of geotextile fabric. Work items associated with the furnishing and placing of geotextiles are incidental.

1.3.6.2 Unit of Measure

Geotextile shall be measured for payment by the square yard of geotextile fabric in place as a component of the road structure. No allowances are made for overlaps. Only the area covered will be measured.

1.3.7 Select Granular Borrow

1.3.7.1 Payment

Payment will be made for all work associated with furnishing and installing to the specified compaction and moisture content, select granular borrow and select granular borrow (modified) for bituminous and concrete pavements, bridge approach panels, and gravel driveway. All work must be in accordance with the tolerances listed in the contract documents.

1.3.7.2 Unit of Measure

Unit of measure will be per cubic yard of material compacted in place in accordance with the contract documents.

1.3.8 Aggregate Base, Class V

1.3.8.1 Payment

Aggregate base located beneath bituminous and concrete roads and used for gravel driveway surface will be measured for payment by the ton. Aggregate base in other locations will not be measured for payment and shall be considered incidental to the bid item to which it pertains. No payment will be made for overfill due to surface or subgrade variations. Material wasted, unused, rejected, or used for the convenience of the Contractor will not be measured for payment. Quantity of aggregate base course, as specified above, will be paid for at the contract unit price for aggregate base course, which will constitute full compensation for the construction and completion of the base course, including the furnishing of all other necessary labor and incidentals.

1.3.8.2 Unit of Measure

Unit of measure: ton.

1.3.9 Pavement Marking

1.3.9.1 Payment

Payment will be made for all work and costs associated with temporary and permanent pavement striping for the project. Work includes all work necessary to provide striping in accordance with the contract documents, to include, pavement preparation, striping application, traffic control, and clean-up.

1.3.9.2 Measurement

Measurement will be in linear feet of striping properly installed in

accordance with the contract documents. Note that it is the length of the stripes that will be measured for payment, not the length of the pavement that is striped.

1.3.9.3 Unit of Measure

Unit of measure: linear feet.

1.3.10 Bituminous Tack and Prime Coats

1.3.10.1 Payment

Payment will be made for all work associated with properly furnishing and installing the bituminous tack and prime coats in accordance with the contract documents and the specified tolerances.

1.3.10.2 Unit of Measure

Unit of measure: gallon.

1.3.11 Bituminous Base

1.3.11.1 Payment

Payment will be made for all work associated with properly furnishing and installing the bituminous base material in accordance with the contract documents and the specified tolerances. The bid unit price includes both the bituminous course mixture and the bituminous material for mixture.

1.3.11.2 Unit of Measure

Unit of measure: ton.

1.3.12 Bituminous Wear Course

1.3.12.1 Payment

Payment will be made for all work associated with properly furnishing and installing the bituminous wearing course in accordance with the contract documents and the specified tolerances. The bid unit price includes both the bituminous course mixture and the bituminous material for mixture.

1.3.12.2 Unit of Measure

Unit of measure: ton.

1.3.13 Shouldering Aggregate

1.3.13.1 Payment

Payment will be made for all costs associated with providing material for and installation of shouldering aggregate. No payment will be made for overfill due to surface or subgrade variations. Material wasted, unused, rejected, or used for the convenience of the Contractor will not be

measured for payment. Quantity of shouldering aggregate, as specified above, will be paid for at the contract unit price for shouldering aggregate, which will constitute full compensation for the construction and completion of the shouldering, including the furnishing of all other necessary labor and incidentals.

1.3.13.2 Unit of Measure

Unit of measure: ton.

1.3.14 Concrete Pavement

1.3.14.1 Payment

Payment will be made for all costs associated with furnishing, installing, finishing, concrete, doweling, and all other incidentals required to provide concrete pavement as required in the contract documents.

1.3.14.2 Unit of Measure

Unit of measure: cubic yard.

1.3.15 Riprap (R6, R7, R8, R12)

1.3.15.1 Payment

Payment will be made for all work associated with properly furnishing and installing riprap of the specified gradations (R6, R7, R8, R12) within the tolerances specified. Price(s) and payment(s) will be made at the contract unit price and will constitute full compensation for furnishing all plant, labor, materials and equipment and constructing the work complete in place as specified.

1.3.15.2 Unit of Measure

Unit of measure will be per ton (2,000 pounds avoirdupois) of specified riprap gradation installed in place complete, as specified.

1.3.15.3 Deductions

All materials permitted by the Contracting Officer to remain outside the tolerances specified will be deducted from the quantity to be paid for. Volume of excess materials will be computed, using the average-end-area of excess above the tolerance line. The excess volume will be deducted from the payment quantity at the following rates per cubic yard, regardless of actual weight per cubic foot.

<u>MATERIAL</u>	<u>TONS PER CUBIC YARD</u>
Riprap	1.5

1.3.16 Bedding (B1 and B2)

1.3.16.1 Payment

Payment will be made for all work associated with properly furnishing and installing bedding of the specified gradations (B1 and B2) within the tolerances specified. Price(s) and payment(s) will be made at the contract unit price and will constitute full compensation for furnishing all plant, labor, materials and equipment and constructing the work complete in place as specified.

1.3.16.2 Unit of Measure

Unit of measure will be per ton (2,000 pounds avoirdupois) of specified bedding gradation installed in place complete, as specified.

1.3.16.3 Deductions

All materials permitted by the Contracting Officer to remain outside the tolerances specified will be deducted from the quantity to be paid for. Volume of excess materials will be computed, using the average-end-area of excess above the tolerance line. The excess volume will be deducted from the payment quantity at the following rates per cubic yard, regardless of actual weight per cubic foot.

<u>MATERIAL</u>	<u>TONS PER CUBIC YARD</u>
Bedding	1.8

1.3.17 Geotextile Fabric (Riprap)

1.3.17.1 Payment

Payment will be made at the contract unit price for acceptable quantities of geotextile fabric. Work items associated with the furnishing and placing of geotextiles are incidental.

1.3.17.2 Measurement

Geotextile shall be measured for payment by the square yard of geotextile fabric in place as a component of the riprap structures. No allowances are made for overlaps. Only the area covered will be measured.

1.3.17.3 Unit of Measure

Unit of measure: square yard.

1.3.18 Bridge Piling

1.3.18.1 Payment

Payment for piling driven at the Contract price per unit of measure will be compensation in full for all costs including, but not limited to, furnishing the piling in the required lengths at the job site, preparing the piles for driving, preboring, jetting, furnishing and placing the driving shoes and concrete for cast-in-place piles, pile points, cutting and trimming, and painting steel shell piles.

The portion of piling directed to be cut off will be paid at the in-place bid price for 50 percent of the length cut off.

1.3.18.2 Measurement

Piling will be measured by the length of acceptable piling below cut-off. The portion of piling directed to be cut off will be measured directly.

1.3.18.3 Unit of Measure

Unit of measure: linear feet.

1.3.19 Bridge Test Piles

1.3.19.1 Payment

Payment for test piles, as a separate item at the Contract price per pile, will be compensation in full for all costs of furnishing and driving the piles in accordance with the requirements of the Contract, including the costs of furnishing and placing driving caps and concrete for cast-in-place concrete piles and painting steel shell piles.

Compensation for additional costs due to dynamic monitoring is included in the payment for test piles including installation of instrumentation, access and interruption of driving operations.

1.3.19.2 Measurement

Measurement will be by the number of test piles furnished in accordance with the Contract and driven as directed by the Contracting Officer. Test piles will not be eliminated from the Contract, unless all piles for the unit in which they are to be driven are eliminated, or unless mutually agreed upon by the Contractor and the Contracting Officer.

In the event the Contracting Officer determines that steel shells for cast-in-place concrete test piles, furnished in accordance with the lengths specified in the Contract, do not develop sufficient bearing capacity or do not provide adequate information for ordering foundation piles, the Contracting Officer may order that extensions be spliced onto these test piles, or that longer piles be delivered in their place. Compensation for additional quantities of piling so ordered and driven will be in accordance with contract clause CHANGES.

1.3.19.3 Unit of Measure

Unit of measure: each.

1.3.20 Common Excavation

1.3.20.1 Payment

Payment will be made for costs associated with excavation for the diversion

channel. Disposition of excess excavated material and unsuitable and frozen materials to excess disposal fill zones will be incidental to the price bid for common excavation. Work includes, but is not limited to, subgrade excavation for roads, excavation for hauling to stockpile, County Road 16 ditch excavation, driveway excavation, placing fill in trucks, placing fills in on-site stockpiles, spreading disposal fills and rough grading of disposal fills, plus dewatering and other items of work. Common excavation does not include excavation for culverts, excavation for structures, excavation for utilities, off-site borrow excavation and any other excavation where measurement and payment is specified elsewhere.

1.3.20.2 Measurement

Common excavation shall be measured for payment by the cubic yard, in the original position, using the average-end-area method based on the original ground lines as determined by the required survey and the lines and grade shown. The excavation area shall include the zone between the bottom of the stripping area and the bottom of the excavation, including the excavation for riprap and bedding. Topsoil stripped from common excavation zones shall be deducted from the quantity measured for common excavation. Final surveys shall be used for any authorized over-depth excavation. Except for authorized over-depth excavation, materials removed outside the lines and grades shown will not be measured for payment. Material removed outside the lines and grades shown, but within the specified tolerance will not be measured for payment. Disposal fill will not be measured for payment. All costs therefore shall be included in the bid item to which the work pertains.

1.3.20.3 Unit of Measure

Unit of measure: cubic yard.

1.3.21 Compacted Fill and Semi-Compacted Fill

1.3.21.1 Payment

Payment will be made for costs associated with the final placement and compaction of compacted and semi-compacted fill in areas noted on the plans, including levees. Work includes, but is not limited to, spreading and compacting fills, and rough grading. Disposal fill for the diversion channel is not included in this pay item. The payment shall include the cost of providing the exploration program for the disposal piles located south of Highway 210 as described in Section 02300 EARTHWORK.

1.3.21.2 Measurement

Compacted and semi-compacted fill shall be measured for payment by the cubic yard in place using the average-end-area method based on the original ground lines as determined by the required survey data after stripping and lines and grades shown with the following limitations or exceptions:

- (1) Tolerances are provided only for the convenience of the Contractor and no material placed outside of the lines, grades, and sections shown as a result of the permitted tolerances will be measured

for payment.

(2) Material placed above the lines, grades, and sections shown as allowance for shrinkage will not be measured for payment.

(3) Volumes occupied by structures will not be included in measurement of fill or embankment quantities.

1.3.21.3 Unit of Measure

Unit of measure: cubic yard.

1.3.22 Stripping

1.3.22.1 Payment

Payment will be made for costs associated with stripping material as specified in the contract documents. Work shall include stripping to the specified depth, properly stockpiling within the specified construction limits to allow for topsoiling, clearing topsoil of unacceptable content, and disposal of excess topsoil in accordance with the contract documents.

1.3.22.2 Measurement

Stripping will be measured for payment by the in place cubic yard using the average-end-area method based on the original ground lines as determined by the required survey data and lines and grades shown with the following limitations or exceptions:

(1) Tolerances are provided only for the convenience of the Contractor and no material removed outside of the lines, grades, and sections shown as a result of the permitted tolerances will be measured for payment.

1.3.22.3 Unit of Measure

Unit of measure: cubic yard.

1.3.23 Topsoil

1.3.23.1 Payment

Payment will be made for costs associated with placing topsoil material to the proper depth, as specified in the contract documents. Work shall include placing topsoil and preparing specified areas to receive new ground cover.

1.3.23.2 Measurement

Topsoil will be measured for payment by the cubic yard in place using the average-end-area method based on the original ground lines as determined by the required survey data and lines and grades shown with the following limitations or exceptions:

(1) Tolerances are provided only for the convenience of the Contractor and no material removed outside of the lines, grades, and sections shown as a result of the permitted tolerances will be measured for payment.

1.3.23.3 Unit of Measure

Unit of measure: cubic yard.

1.3.24 Seed with Fertilizer and Mulch

1.3.24.1 Payment

Seeding will be measured for payment by the acre (AC) in place. The area measured for payment will be limited to the areas designated for seeding as shown on the drawings. The work shall include minor placement of topsoil regardless of source, amendments, placement of seed, fertilizer, mulch and care of turf. Restoration by seeding of disturbed areas not designated on the drawings will not be measured for payment and shall be incidental to the work being performed. Payment will be made at the contract unit price and will constitute full compensation for furnishing the materials and constructing the work complete in place as specified.

1.3.24.2 Measurement

Measurement will be in acres, regardless of the seed mixture or quantity of seed used, by the area seeded in accordance with the plans.

1.3.24.3 Unit of Measure

Unit of measure: acre.

1.3.25 Forcemain Gate Valves

1.3.25.1 Payment

Payment will be made for all labor, material, and costs associated with providing and installing approved gate valves on the force main in accordance with the contract documents.

1.3.25.2 Measurement

Measurement will be per each valve installed complete in place in accordance with the contract documents.

1.3.25.3 Unit of Measure

Unit of measure: each.

1.3.26 Haul and Stockpile Excess Topsoil

1.3.26.1 Payment

Payment will be made for all work and costs associated with hauling and stockpiling excess topsoil material scheduled for use in the Stage II contract. Material shall be properly placed within the area identified in the contract documents.

1.3.26.2 Measurement

Measurement will be in cubic yard of topsoil properly stockpiled in the specified location.

1.3.26.3 Unit of Measure

Unit of measure: cubic yard.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01312

QUALITY CONTROL SYSTEM (QCS)

PART 1 GENERAL

- 1.1 GENERAL
- 1.2 QCS SOFTWARE
- 1.3 SYSTEM REQUIREMENTS
- 1.4 RELATED INFORMATION
 - 1.4.1 QCS User Guide
 - 1.4.2 Contractor Quality Control(CQC) Training
- 1.5 CONTRACT DATABASE
- 1.6 DATABASE MAINTENANCE
 - 1.6.1 Administration
 - 1.6.1.1 Contractor Information
 - 1.6.1.2 Subcontractor Information
 - 1.6.1.3 Correspondence
 - 1.6.1.4 Equipment
 - 1.6.1.5 Management Reporting
 - 1.6.2 Finances
 - 1.6.2.1 Pay Activity Data
 - 1.6.2.2 Payment Requests
 - 1.6.3 Quality Control (QC)
 - 1.6.3.1 Daily Contractor Quality Control (CQC) Reports.
 - 1.6.3.2 Deficiency Tracking.
 - 1.6.3.3 Three-Phase Control Meetings
 - 1.6.3.4 Accident/Safety Tracking.
 - 1.6.3.5 Features of Work
 - 1.6.3.6 QC Requirements
 - 1.6.4 Submittal Management
 - 1.6.5 Schedule
 - 1.6.6 Import/Export of Data
- 1.7 IMPLEMENTATION
- 1.8 DATA SUBMISSION
 - 1.8.1 File Medium
 - 1.8.2 Disk or CD-ROM Labels
 - 1.8.3 File Names
- 1.9 MONTHLY COORDINATION MEETING
- 1.10 NOTIFICATION OF NONCOMPLIANCE

-- End of Section Table of Contents --

SECTION 01312

QUALITY CONTROL SYSTEM (QCS)

PART 1 GENERAL

1.1 GENERAL

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

- Administration
- Finances
- Quality Control
- Submittal Monitoring
- Scheduling
- Import/Export of Data

For ease and speed of communications, both Government and Contractor will, to the maximum extent feasible, exchange correspondence and other documents in electronic format.

Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

Particular attention is directed to other clauses which have a direct relationship to the reporting to be accomplished through QCS:

- 52.236-15 Schedules for Construction Contracts,
- 52.232-5 Payments Under Firm Fixed Price Construction Contracts,
- Section 01330 SUBMITTAL PROCEDURES,
- Section 01320 PROJECT SCHEDULE,
- Section 01451 CONTRACTOR QUALITY CONTROL

There is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.2 QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the Government's RMS Internet Website located at <http://winrms.usace.army.mil>. Upon specific justification and request by the Contractor, the Government can provide QCS on 3-1/2 inch high-density diskettes or CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available.

1.3 SYSTEM REQUIREMENTS

The following listed hardware and software is the minimum system configuration that the Contractor shall have to run QCS:

Hardware

IBM-compatible PC with 200 MHz Pentium or higher processor

32+ MB RAM

4 GB hard drive disk space for sole use by the QCS system

3 1/2 inch high-density floppy drive

Compact disk Reader/Writer (CD/RW)

Color monitor

Laser printer compatible with HP LaserJet III or better, with minimum 4 MB installed memory.

Connection to the Internet, minimum 56K BPS.

Software

MS Windows 98 or newer version operating system (MS Windows NT 4.0 or newer is recommended).

Word Processing software compatible with MS Word 97 or newer.

Internet browser (Netscape 6.1x or Internet Explorer 5.5x or newer).

The Contractor's computer system shall be protected by virus protection software that is regularly upgraded with all issued manufacturer's updates throughout the life of the contract.

Electronic mail (E-mail) compatible with standard Internet e-mail protocols.

1.4 RELATED INFORMATION

1.4.1 QCS User Guide

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website; the Contractor can obtain the current address from the Government. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.4.2 Contractor Quality Control(CQC) Training

The use of QCS will be discussed at the Contractor's QC System Manager Training classes.

1.5 CONTRACT DATABASE

Prior to the pre-construction conference, the Government shall provide the Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.6 DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Data updates to the Government shall be submitted with file attachments, e.g., daily reports, schedule updates, payment requests. The QCS database typically shall include current data on the following items:

1.6.1 Administration

1.6.1.1 Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, and management staff. The Contractor shall deliver Contractor administrative data in electronic format prior to the preconstruction conference.

1.6.1.2 Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. The Contractor shall deliver subcontractor administrative data in electronic format prior to the preconstruction conference.

1.6.1.3 Correspondence

All Contractor correspondence to the Government shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S". Letters initiated by the Contractor's home

(main) office shall be prefixed with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

1.6.1.4 Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.6.1.5 Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.6.2 Finances

1.6.2.1 Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.6.2.2 Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet and include it with the payment request. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. The Contractor shall submit the payment requests with supporting data with file attachment(s). A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.6.3 Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC System, prepare daily reports, identify and track deficiencies, document progress of work, and support other contractor QC requirements. The Contractor shall maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. The Contractor shall provide the Government a Contractor Quality Control (CQC) Plan within the time required in Section 01451 CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, the Contractor shall submit a data diskette or CD-ROM reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.6.3.1 Daily Contractor Quality Control (CQC) Reports.

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by Section 01451 CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Government using E-mail or diskette within 24 hours after the date covered by the report. Use of either mode of submittal shall be coordinated with the Government representative. The Contractor shall also provide the Government a signed, printed copy of the daily CQC report.

1.6.3.2 Deficiency Tracking.

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

1.6.3.3 Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.6.3.4 Accident/Safety Tracking.

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the Government of any accidents occurring on the jobsite. This brief supplemental entry is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 200.

1.6.3.5 Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.6.3.6 QC Requirements

The Contractor shall develop and maintain a complete list of QC testing, transferred and installed property, and user training requirements in QCS.

The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the Government via QCS.

1.6.4 Submittal Management

The Government will provide the initial submittal register, ENG Form 4288, SUBMITTAL REGISTER, in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update, ENG Form 4288, shall be produced using QCS. RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.6.5 Schedule

The Contractor shall develop a construction schedule consisting of pay activities, in accordance with Contract Clause "Schedules for Construction Contracts", and Section 01320 PROJECT SCHEDULE. This schedule shall be input and maintained in the RMS-QC database. The updated schedule data shall be included with each pay request submitted by the Contractor.

1.6.6 Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data, and schedule data.

1.7 IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.8 DATA SUBMISSION

The Contractor shall submit updates, payment requests, correspondence and other data in the format directed by the Contracting Officer. Submission formats available include diskettes, CD-ROM, or E-mail. Generally, E-mail is preferred for submissions from the Contractor's home office, and diskette or CD-ROM is preferred for submissions from the contractor's field office.

Data on the disks or CDs shall be exported using the QCS built-in export function. If used, diskettes and CD-ROMs will be submitted in accordance with the following:

1.8.1 File Medium

The Contractor shall submit required data on 3-1/2 inch double-sided high-density diskettes formatted to hold 1.44 MB of data, capable of running under Microsoft Windows 95 or newer. Alternatively, CD-ROMs may be used. They shall conform to industry standards used in the United States. All data shall be provided in English.

1.8.2 Disk or CD-ROM Labels

The Contractor shall affix a permanent exterior label to each diskette and CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.8.3 File Names

The Government will provide the file names to be used by the Contractor with the QCS software.

1.9 MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions. The Contractor shall make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01320

PROJECT SCHEDULE

PART 1 GENERAL

- 1.1 SUBMITTALS
- 1.2 QUALIFICATIONS

PART 2 PRODUCTS

- 2.1 COMPUTER SOFTWARE REQUIREMENTS

PART 3 EXECUTION

- 3.1 GENERAL
- 3.2 BASIS FOR PAYMENT
- 3.3 SOFTWARE
 - 3.3.1 Use of the Critical Path Method
 - 3.3.2 Level of Detail Required
 - 3.3.2.1 Activity Durations
 - 3.3.2.2 Procurement Activities
 - 3.3.2.3 Government Activities
 - 3.3.2.4 Responsibility
 - 3.3.2.5 Feature of Work
 - 3.3.3 Scheduled Project Completion
 - 3.3.3.1 Constraint of Last Activity
 - 3.3.3.2 Early Project Completion
 - 3.3.4 Interim Completion Dates
 - 3.3.5 Default Progress Data Disallowed
 - 3.3.6 Out-of-Sequence Progress
 - 3.3.7 Extended Non-Work Periods
 - 3.3.8 Negative Lags
- 3.4 PROJECT SCHEDULE SUBMISSIONS
 - 3.4.1 Initial Project Schedule Submission
 - 3.4.2 Periodic Updates
 - 3.4.3 Standard Activity Coding Dictionary
- 3.5 SUBMISSION REQUIREMENTS
 - 3.5.1 Earnings Report
 - 3.5.2 Network Diagram
- 3.6 PERIODIC PROGRESS MEETINGS
 - 3.6.1 Meeting Attendance
 - 3.6.2 Update Submission Following Progress Meeting
 - 3.6.3 Progress Meeting Contents
- 3.7 REQUESTS FOR TIME EXTENSIONS

- 3.7.1 Justification of Delay
- 3.7.2 Submission Requirements
- 3.8 DIRECTED CHANGES
- 3.9 OWNERSHIP OF FLOAT

-- End of Section Table of Contents --

SECTION 01320

PROJECT SCHEDULE

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Initial Project Schedule; G, COR Periodic Updates; G, COR

Five copies of the initial project schedule shall be submitted.
Two copies of periodic project schedule updates shall be submitted.

SD-04 Samples

Software

The Contractor shall furnish the Government copies of the scheduling software if required under Paragraph COMPUTER SOFTWARE REQUIREMENTS.

1.2 QUALIFICATIONS

The Contractor shall designate an authorized representative who shall be responsible for the preparation of all required project schedule reports.

PART 2 PRODUCTS

2.1 COMPUTER SOFTWARE REQUIREMENTS

The Contractor shall furnish the Government with the software to be used, unless waived by the Contracting Officer. The Contractor shall assist in installing the software in the Government resident office. The Contractor shall provide the software complete, including documentation and updates used in the Contractor's system. The software shall remain the property of the Contractor, but shall be in the possession of and for the exclusive use by the Government during the contract period. The Government shall have rights to install the software on 3 computers (resident office, area office, and district office).

PART 3 EXECUTION

3.1 GENERAL

Pursuant to the Contract Clause SCHEDULES FOR CONSTRUCTION CONTRACTS (FAR 52.236-15), a project schedule as described below shall be prepared. The scheduling of all work shall be the responsibility of the Contractor. Contractor management personnel shall actively participate in its development. Subcontractors and suppliers working on the project shall contribute in developing and maintaining an accurate project schedule. The approved project schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of progress payments.

3.2 BASIS FOR PAYMENT

The project schedule shall be the basis for measuring Contractor progress. The Contracting Officer will use an approved project schedule to evaluate Contractor progress for payment purposes. In the case where project schedule revisions have been directed by the Contracting Officer and those revisions have not been included in the project schedule, then the Contracting Officer may hold retainage up to the maximum allowed by contract, each payment period, until the project schedule updates have been accepted.

3.3 SOFTWARE

Computer software systems utilized by the Contractor to produce the project schedule shall be capable of providing all requirements of this specification.

3.3.1 Use of the Critical Path Method

The project schedule shall clearly show the critical path. If a network analysis system is used, the Critical Path Method (CPM) of network calculation shall be used to generate the project schedule, provided in either the Precedence Diagram Method (PDM) or the Arrow Diagram Method (ADM).

3.3.2 Level of Detail Required

The project schedule shall include an appropriate level of detail. The Contracting Officer will use, but is not limited to, the following conditions to determine the appropriate level of detail to be used in the project schedule.

3.3.2.1 Activity Durations

The Contractor shall breakout lump-sum or sum-job contract line items into subcategories, or activities. The number of activities shall be sufficient to allow the progress to be accurately determined between payment periods.

3.3.2.2 Procurement Activities

Tasks related to the procurement of long lead materials or equipment shall

be included as separate activities in the project schedule. Long lead materials and equipment are those materials that have a procurement cycle of over calendar 90 days. Examples of procurement process activities include, but are not limited to: submittals, approvals, procurement, fabrication, and delivery.

3.3.2.3 Government Activities

Government and other agency activities that could impact progress shall be shown. These activities include, but are not limited to: approvals, inspections, utility tie-in, Government furnished property, and notice to proceed for phasing requirements.

3.3.2.4 Responsibility

All activities shall be identified in the project schedule by the party (Prime Contractor, subcontractor, Government agency, etc.) responsible to perform the work. Activities shall not belong to more than one responsible party. The responsible party for each activity shall be identified by the Responsibility Code.

3.3.2.5 Feature of Work

All activities shall be identified in the project schedule according to the feature of work to which the activity belongs. Feature of work refers, but is not limited to a work breakdown structure for the project schedule. The feature of work for each activity shall be identified by the Feature of Work Code.

3.3.3 Scheduled Project Completion

The schedule interval shall extend from notice to proceed to the contract completion date. The notice to proceed date shall be taken as the date that notice to proceed was acknowledged.

3.3.3.1 Constraint of Last Activity

Completion of the last activity in the project schedule shall be constrained by the contract completion date. If the early finish of the last activity falls after the contract completion date, then the critical path shall show a negative float.

3.3.3.2 Early Project Completion

If the project schedule shows project completion prior to the contract completion date, the Contractor shall identify activities that have been accelerated and activities that are scheduled in parallel to support the "early" completion. The Contractor shall assist the Contracting Officer in evaluating the Contractor's ability to actually complete prior to the contract completion date.

3.3.4 Interim Completion Dates

Contractually specified interim completion dates shall also be constrained

to show negative float if the early finish date of the last activity in that phase falls after the interim completion date.

3.3.5 Default Progress Data Disallowed

The Contractor shall document the actual start and actual finish dates on the daily quality control report for every in-progress or completed activity and ensure that the data contained on the daily quality control reports is the sole basis for project schedule updating. Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in CPM scheduling software systems. Actual start and finish dates on the CPM schedule shall match those dates provided from Contractor quality control reports.

3.3.6 Out-of-Sequence Progress

The Contracting Officer shall be notified prior to work on any activities that are out-of-sequence with the project schedule. The Contractor shall update the project schedule to correct any out-of-sequence work.

3.3.7 Extended Non-Work Periods

Non-work periods of over 5 working days shall be identified by addition of activities that represent the delays.

3.3.8 Negative Lags

Lag durations contained in the project schedule shall not have a negative value.

3.4 PROJECT SCHEDULE SUBMISSIONS

The Contractor shall provide the submissions as described below.

3.4.1 Initial Project Schedule Submission

The project schedule shall provide a reasonable sequence of activities which represent work through the entire contract period and shall be at a reasonable level of detail.

3.4.2 Periodic Updates

Based on the result of progress meetings, the Contractor shall submit periodic project schedule updates. The Contractor shall furnish information and project schedule data, which in the judgement of the Contracting Officer, is necessary for verifying the Contractor's progress.

3.4.3 Standard Activity Coding Dictionary

The Contractor shall submit, with the initial project schedule, a coding scheme that shall be used throughout the project schedule for all activity codes contained in the project schedule. The coding scheme submitted shall list the values for each activity code category and translate those values into project specific designations. For example, a responsibility code

value, "ELE", may be identified as "Electrical Subcontractor". Activity code values shall represent the same information throughout the duration of the contract.

3.5 SUBMISSION REQUIREMENTS

The following items shall be submitted for each project schedule submission:

3.5.1 Earnings Report

The Contractor shall submit a compilation of the Contractor's Total Earnings on the project through the most recent Monthly Progress Meeting. Activities shall be grouped by contract line item. The printed report shall contain, for each contract line item: activity number, activity description, original budgeted amount, total quantity, quantity to date, percent complete (based on cost), and earnings to date. A total project percent complete shall also be provided. If necessary to substantiate partial payment and requested by the Contracting Officer, the earnings report shall detail activities within a contract line item.

3.5.2 Network Diagram

A network diagram shall be required on the initial project schedule submission and on periodic submissions when requested by the Contracting Officer (not less than quarterly). The network diagram shall depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The network diagram shall be constructed to meet the following conditions:

- a. Continuous Flow. Diagrams shall show a continuous flow from left to right with no arrows from right to left. The activity or event number, description, duration, and estimated earned value shall be shown on the diagram.
- b. Project Milestone Dates. Dates shall be shown on the diagram for start of project, any contract required interim completion dates, and contract completion dates.
- c. Critical Path. The critical path shall be clearly shown.
- d. Banding. Activities shall be grouped to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.
- e. S-Curves. Earnings curves showing projected early and late earnings and earnings to date.

3.6 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss payment shall include a monthly onsite meeting or other regular intervals mutually agreed to at the preconstruction conference. During this meeting the Contractor shall describe, on an activity by activity basis, all proposed revisions and adjustments to the project schedule required to reflect the current status of the project.

3.6.1 Meeting Attendance

The Contractor's project manager and the Contractor's authorized representative responsible for preparation of the project schedule shall attend the regular progress meeting.

3.6.2 Update Submission Following Progress Meeting

A complete update of the project schedule containing all approved progress, revisions, and adjustments, based on the regular progress meeting, shall be submitted not later than 4 working days after every third monthly progress meeting.

3.6.3 Progress Meeting Contents

Update information, including actual start dates, actual finish dates, remaining durations, and cost-to-date shall be subject to the approval of the Contracting Officer. The Contractor shall address the following minimum set of items, on an activity by activity basis, during each progress meeting.

- a. Start and Finish Dates. The actual start and actual finish dates for each completed activity. The actual start and projected finish dates for each activity in-progress.
- b. Cost Completion. The earnings for each activity started. Payment will be based on earnings for each in-progress or completed activity. Payment for individual activities will not be made for work that contains defects.
- c. Project Schedule Changes. All changes pertaining to notice to proceed on change orders, change orders to be incorporated into the project schedule, Contractor proposed changes in work sequence, corrections to project schedule for out-of-sequence progress, lag durations, and other changes that have been made pursuant to contract provisions shall be specifically identified and discussed.
- d. Other Changes. Other changes required due to delays in completion of any activity or group of activities include unusually severe weather, product procurement, or other delays or work stoppages which make re-planning the work necessary.

3.7 REQUESTS FOR TIME EXTENSIONS

In the event the Contractor requests an extension of the contract completion date, the Contractor shall furnish such justification, project schedule data and supporting evidence as the Contracting Officer may deem necessary for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract.

3.7.1 Justification of Delay

The project schedule shall clearly display that the Contractor has used, in

full, all the float time available for the work involved with this request.

The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon an approved project schedule and other factual information. Delays that are caused by the Contractor's own actions will not be a cause for a time extension to the contract completion date.

3.7.2 Submission Requirements

The Contractor shall submit a justification in accordance with the requirements of other appropriate contract clauses and shall include, as a minimum:

- a. A list of affected activities, with their associated project schedule activity number.
- b. A brief explanation of the cause(s) of the change.
- c. An analysis of the overall impact of the changes proposed.
- d. If requested by the Contracting Officer, the Contractor shall provide an interim project schedule update with revised activities.

3.8 DIRECTED CHANGES

If notice to proceed is issued for undefinitized work, the Contractor shall submit proposed project schedule revisions to the Contracting Officer within 14 calendar days of the notice to proceed being issued. The proposed revisions to the project schedule must be approved by the Contracting Officer prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor with suggested revisions to the project schedule; and the Contractor shall update the project schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached.

3.9 OWNERSHIP OF FLOAT

Float available in the project schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

- 1.1 SUBMITTAL IDENTIFICATION
- 1.2 SUBMITTAL CLASSIFICATION
 - 1.2.1 Government Approved
 - 1.2.2 Information Only
- 1.3 APPROVED SUBMITTALS
- 1.4 DISAPPROVED SUBMITTALS
- 1.5 WITHHOLDING OF PAYMENT
- 1.6 MEASUREMENT AND PAYMENT

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

- 3.1 GENERAL
- 3.2 SUBMITTAL REGISTER (ENG FORM 4288)
- 3.3 SCHEDULING
- 3.4 TRANSMITTAL FORM (ENG FORM 4025)
- 3.5 SUBMITTAL PROCEDURE
 - 3.5.1 Submittal Copies
 - 3.5.2 Schedule
 - 3.5.3 Shop Drawings
 - 3.5.4 Deviations
- 3.6 CONTROL OF SUBMITTALS
- 3.7 GOVERNMENT APPROVED SUBMITTALS
- 3.8 INFORMATION ONLY SUBMITTALS
- 3.9 STAMPS
- 3.10 CONTRACTOR RECORD DRAWINGS
 - 3.10.1 As-Built Shop Drawings

-- End of Section Table of Contents --

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL IDENTIFICATION

Submittals required are identified by SD numbers and titles as follows:

- SD-01 Preconstruction Submittals
- SD-02 Shop Drawings
- SD-03 Product Data
- SD-04 Samples
- SD-05 Design Data
- SD-06 Test Reports
- SD-07 Certificates
- SD-08 Manufacturer's Instructions
- SD-09 Manufacturer's Field Reports
- SD-10 Operation and Maintenance Data
- SD-11 Closeout Submittals
- SD-12 Bridge Submittals
- SD-18 Records

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 Government Approved

Governmental approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.2.2 Information Only

All submittals not requiring Government approval will be for information

only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the CQC requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

1.6 MEASUREMENT AND PAYMENT

The work of this section will not be measured for payment. The Contractor shall be responsible for the work of this section, without any direct compensation being made other than the payment received for contract items.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) representative and each item shall be stamped, signed, and dated by the CQC representative indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's,

manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

3.2 SUBMITTAL REGISTER (ENG FORM 4288)

At the end of this section is a submittal register (ENG Form 4288) showing items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. Columns "c" through "f" have been completed by the Government; the Contractor shall complete columns "a" and "g" through "i" and submit the forms to the Contracting Officer for approval within 7 calendar days after Notice to Proceed. The Contractor shall keep the submittal register up-to-date and shall submit it to the Government together with the monthly payment request. The approved submittal register will become the scheduling document and will be used to control submittals throughout the life of the contract. The submittal register and the progress schedules shall be coordinated.

3.3 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals. The submittal register shall provide for a reasonable timely distribution of shop drawings as they are prepared (particularly within a specific discipline, i.e.: structural, mechanical).

3.4 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

3.5 SUBMITTAL PROCEDURE

3.5.1 Submittal Copies

The Contractor shall submit 6 hardcopies of each submittal (both government approved and for information only), or 1 hardcopy and 1 electronic copy,

unless otherwise indicated. Each transmittal shall address only one submittal item. Transmittals returned for resubmission shall be resubmitted in their entirety. When approved by the Contracting Officer, routine test reports and delivery tickets may be submitted with daily quality control reports in place of following submittal procedures under this section.

3.5.2 Schedule

Shop drawings shall be submitted with ample time to secure Government approval prior to the time the items covered thereby are to be delivered to the site. Additional time should be allowed for possible resubmittal. Materials fabricated or delivered without Government approval of the shop drawing will be subject to rejection. All submittals shall be made prior to commencement of applicable work, and allow adequate time for government review acceptable to the Contracting Officer.

3.5.3 Shop Drawings

Shop drawings shall be reproductions on high quality paper with clear legible print. Drawings shall generally be bordered a minimum of one inch and trimmed to neat lines. Shop drawing quality will be subject to approval. Each shop drawing, including catalog data, shall be identified with a title block including the name of the Contractor, contract number, name and location of project, and name of the item of work or structure to which the shop drawing applies. Catalog data, including specifications and full descriptive matter, may be submitted as shop drawings. Catalog data must be supplemented as necessary to include all pertinent data to verify conformance to the contract documents. When catalog data includes non applicable data, the applicable data shall be clearly indicated.

3.5.4 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

3.6 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

3.7 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Five copies of the submittal will be retained by the Contracting Officer and 1 copy of the submittal will be returned to the Contractor.

3.8 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

3.9 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR
(Firm Name)
 _____ Approved
 _____ Approved with corrections as noted on submittal data and/or attached sheets(s).
 SIGNATURE: _____
TITLE: _____
DATE: _____

3.10 CONTRACTOR RECORD DRAWINGS

The Contractor shall maintain a separate set of marked-up full-scale contract drawings indicating as-built conditions. These drawings shall be maintained in a current condition at all times until completion of the work and shall be available for review by Government personnel at all times. All variations from the contract drawings, for whatever reason, including those occasioned by modifications, optional materials, and the required coordination between trades, shall be indicated. These variations shall be shown in the same general detail utilized in the contract drawings. Revisions shall be shown on all drawings and details related to the changed

feature. These drawings shall be neatly prepared with clear legible print.

Deleted items shall be indicated in red and added items or changed locations shall be shown in green. These drawings shall be furnished to the Contracting Officer within 30 days after the required contract completion date.

3.10.1 As-Built Shop Drawings

The Contractor shall record changes to shop drawings to indicate as-built conditions. These drawings shall show all changes and revisions made up to the time the equipment is completed and accepted.

-- End of Section --

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE <i>(Read instructions on the reverse side prior to initiating this form)</i>	DATE	TRANSMITTAL NO.
---	------	-----------------

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE: <input type="checkbox"/> THIS IS A NEW TRANSMITTAL <input type="checkbox"/> THIS IS A RESUBMITTAL OF TRANSMITTAL _____
-----	-------	--------------	---

SPECIFICATION SEC. NO. <i>(Cover only one section with each transmittal)</i>	PROJECT TITLE AND LOCATION	CHECK ONE: THIS TRANSMITTAL IS FOR <input type="checkbox"/> FIO <input type="checkbox"/> GOV'T. APPROVAL
--	----------------------------	--

ITEM NO.	DESCRIPTION OF ITEM SUBMITTED <i>(Type size, model number/etc.)</i>	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. <i>(See instruction no. 8)</i>	NO. OF COPIES	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE	VARIATION <i>(See instruction No. 6)</i>	FOR CE USE CODE
				SPEC. PARA. NO.	DRAWING SHEET NO.			
<i>a.</i>	<i>b.</i>	<i>c.</i>	<i>d.</i>	<i>e.</i>	<i>f.</i>	<i>g.</i>	<i>h.</i>	<i>i.</i>

REMARKS	I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as other wise stated. <div>NAME AND SIGNATURE OF CONTRACTOR</div>
---------	---

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED <i>(List by Item No.)</i>	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE
---	--	------

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.
2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.
3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288-R for each entry on this form.
4. Submittals requiring expeditious handling will be submitted on a separate form.
5. Separate transmittal form will be used for submittals under separate sections of the specifications.
6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".
7. Form is self-transmittal, letter of transmittal is not required.
8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.
9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

- | | |
|---|---|
| A -- Approved as submitted. | E -- Disapproved (See attached). |
| B -- Approved, except as noted on drawings. | F -- Receipt acknowledged. |
| C -- Approved, except as noted on drawings.
Refer to attached sheet resubmission required. | FX -- Receipt acknowledged, does not comply
as noted with contract requirements. |
| D -- Will be returned by separate correspondence. | G -- Other (<i>Specify</i>) |

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

SUBMITTAL REGISTER

CONTRACT NO.
DACW37-02-B-0016

TITLE AND LOCATION Breckenridge Stage 1						CONTRACTOR											
ACTIVITY NO	TRANSMITTAL NO	SPEC NO	DESCRIPTION	PARAGRAPH #	GOVT CLASSIFICATION OR SPECIAL VIEW OR REMARKS	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		DATE FWD TO APPR AUTH/	APPROVING AUTHORITY			DATE RCD FRM APPR	REMARKS	
						SUBMIT (g)	BY (h)	MATERIAL NEEDED (i)	ACTION (j)	DATE OF ACTION (k)		DATE RCD FROM CONTR (l)	DATE FWD TO OTHER REVIEWER (m)	DATE RCD FROM OTH REVIEWER (n)			ACTION (o)
	01000		SD-01 Preconstruction Submittals														
			Dewatering plan														
			Shoring plan														
			SD-11 Closeout Submittals														
			Utility As-Builts														
	01270		SD-03 Product Data														
			Weight Certificates														
			SD-02 Shop Drawings														
			Quantity Surveys														
	01320		SD-01 Preconstruction Submittals														
			Initial Project Schedule		G COR												
			Periodic Updates		G COR												
			SD-04 Samples														
			Software														
	01355		SD-01 Preconstruction Submittals														
			Environmental Protection Plan	1.7	G ENV												
	01356		SD-07 Certificates														
			Mill Certificate or Affidavit	2.1.3													
	01451		SD-08 Manufacturer's Instructions														
			Contractor Quality Control Plan		G COR												
			Laboratory Quality Management														
			Manual														
			Documentation of Work		G COR												
	01500		SD-02 Shop Drawings														
			Site Plan														
			Government Field Office														

SUBMITTAL REGISTER

CONTRACT NO.
DACW37-02-B-0016

TITLE AND LOCATION Breckenridge Stage 1						CONTRACTOR											
A C T I V I T Y N O	T R A N S M I T T A L N O	S P E C S E C T	DESCRIPTION	P A R A G # R A P H	G O V T C L A S S I F I C A T I O N R	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	APPROVING AUTHORITY		DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR	REMARKS	
						SUBMIT (g)	BY (h)	MATERIAL NEEDED BY (i)	A C T I O N C O D E (j)	DATE OF ACTION (k)		DATE FWD TO OTHER REVIEWER (m)	DATE RCD FROM OTH REVIEWER (n)				A C T I O N C O D E (o)
(a)	(b)	(c)	ITEM SUBMITTED (d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01567	SD-01 Preconstruction Submittals														
			Application		G PM												
			SD-02 Shop Drawings														
			Temporary Erosion And Sediment														
			Control Plan														
			SD-11 Closeout Submittals														
			Notice of Termination														
		01780	SD-11 Closeout Submittals														
			As-Built Drawings		G GEN												
		02300	SD-06 Test Reports														
			Testing														
			Daily Report Forms														
		02315	SD-06 Test Reports														
			Testing	3.12													
		02370	SD-02 Shop Drawings														
			Layout	3.2.2	G COR												
			Erosion Control	3.2.2	G COR												
			Seed Establishment Period		G COR												
			Maintenance Record	3.6													
			SD-03 Product Data														
			Geosynthetic and synthetic		G AE												
			binding material														
			Hydraulic Mulch		G AE												
			Geotextile Fabrics	2.2	G AE												
			Equipment		G COR												
			Finished Grade	3.1.1	G COR												

SUBMITTAL REGISTER

CONTRACT NO.
DACW37-02-B-0016

TITLE AND LOCATION Breckenridge Stage 1						CONTRACTOR											
A C T I V I T Y N O	T R A N S M I T T A L N O	S P E C S E C T	DESCRIPTION	P A R A G R A P H	G O V E R N M E N T C L A S S I F I C A T I O N S I F I C A R E I V O W N E R	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR	REMARKS	
						SUBMIT (g)	BY (h)	MATERIAL NEEDED (i)	A C T I O N C O D E (j)	DATE OF ACTION (k)	DATE RCD FROM CONTR (l)	DATE FWD TO APPR AUTH/ (m)	DATE RCD FROM OTH REVIEWER (n)	A C T I O N C O D E (o)			DATE OF ACTION (p)
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		02370	Erosion Control Blankets		G COR												
			SD-04 Samples														
			Materials		G COR												
			SD-06 Test Reports														
			Geosynthetic Binders		G COR												
			Hydraulic Mulch		G COR												
			Geotextile Fabrics	2.2	G COR												
			Erosion Control Blankets		G COR												
			Sand		G COR												
			Gravel	2.3	G COR												
			SD-07 Certificates														
			Fill Material		G COR												
			Mulch	2.1	G COR												
			Hydraulic Mulch		G COR												
			Geotextile Fabrics	2.2	G COR												
			Geosynthetic Binders		G COR												
			Synthetic Soil Binders		G COR												
			Erosion Control Plan	3.1	G COR												
			Construction Work Sequence	3.1	G COR												
			Schedule														
			Installer's Qualification	1.6	G COR												
			Recycled Plastic		G COR												
			Seed		G AE												
			Asphalt Adhesive		G AE												
			Tackifier		G AE												
			Wood By-Products		G AE												

SUBMITTAL REGISTER

CONTRACT NO.
DACW37-02-B-0016

TITLE AND LOCATION Breckenridge Stage 1						CONTRACTOR											
A C T I V I T Y N O	T R A N S M I T T A L N O	S P E C S E C T	DESCRIPTION	P A R A G R A P H	G O V E R N M E N T C L A S S I F I C A T I O N S I F I C A R E I V O W N E R	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR	REMARKS	
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		02370	Wood		G COR												
			SD-10 Operation and Maintenance Data														
			Maintenance Instructions	3.6.1.1	G COR												
		02373	SD-03 Product Data														
			Thread	2.1.2	G AE												
			Manufacturing Quality Control		G COR												
			Manual Sampling and Testing														
			SD-04 Samples														
			Quality Assurance Samples and Tests	3.1	G COR												
			SD-07 Certificates														
			Geotextile	2.1.1	G COR												
		02388	SD-01 Preconstruction Submittals														
			Material Sources		G COR												
			SD-03 Product Data														
			Geotextile Data														
			SD-06 Test Reports														
			Gradation Test														
			SD-07 Certificates														
			Certified Weight Scale Tickets														
		02446	SD-01 Preconstruction Submittals														
			Alignment Plots		G AE												
			SD-02 Shop Drawings														
			Layout plan		G AE												
			SD-03 Product Data														

SUBMITTAL REGISTER

CONTRACT NO.
DACW37-02-B-0016

TITLE AND LOCATION Breckenridge Stage 1						CONTRACTOR											
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						SUBMIT	BY	MATERIAL NEEDED	A C T I O N C O D E	DATE OF ACTION		DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	A C T I O N C O D E	DATE OF ACTION		
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		02446	Carrier Pipe		G AE												
			Fittings		G AE												
			Skids		G AE												
			Bracing		G AE												
			Related Appurtences		G AE												
			SD-06 Test Reports														
			Field Quality Control Test Results		G COR												
			Source Quality Control Tests		G COR												
			Results of Alignment Plots		G COR												
		02464	SD-02 Shop Drawings														
			Metal Sheet Piling	2.1	G AE												
			Driving	3.1.2.2	G COR												
			SD-03 Product Data														
			Pile Driving Equipment	3.1.1	G COR												
			Pulling and Redriving	3.1.5	G COR												
			Interlocked Joint Strength in Tension Test		G ED												
			SD-06 Test Reports														
			Materials Tests	2.4.1	G COR												
		02532	SD-06 Test Reports														
			Hydrostatic Tests	3.2	G COR												
		02620	SD-04 Samples														
			Filter Fabric	2.2	G COR												
			Pipe for Subdrains	2.1	G COR												
			SD-07 Certificates														
			Filter Fabric	2.2													

SUBMITTAL REGISTER

CONTRACT NO.
DACW37-02-B-0016

TITLE AND LOCATION Breckenridge Stage 1						CONTRACTOR											
A C T I V I T Y N O	T R A N S M I T T A L N O	S P E C S E C T	DESCRIPTION	P A R A G R A P H	G O V E R N M E N T C L A S S I F I C A T I O N S I F I C A R E I V O W N E R	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR	REMARKS	
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		02620	Pipe for Subdrains	2.1													
		02630	SD-03 Product Data														
			Placing Pipe	3.3													
			SD-07 Certificates														
			Hydrostatic Test on Watertight Joints														
			Determination of Density	3.7.5													
			Frame and Cover for Gratings	2.3.6													
		02710	SD-02 Shop Drawings														
			Traffic Control Plan		G COR												
		02720	SD-01 Preconstruction Submittals														
			Aggregate Sources		G COR												
			SD-04 Samples														
			Aggregate Samples		G COR												
			SD-06 Test Reports														
			Testing														
		02741	SD-03 Product Data														
			Mix Design	2.3	G AE												
			SD-04 Samples														
			Asphalt Cement Binder	2.2	G												
			Aggregates	2.1	G												
			SD-06 Test Reports														
			Aggregates	2.1	G COR												
			QC Monitoring	3.7.2.1	G												
			SD-07 Certificates														
			Asphalt Cement Binder	2.2	G												

SUBMITTAL REGISTER

CONTRACT NO.
DACW37-02-B-0016

TITLE AND LOCATION Breckenridge Stage 1						CONTRACTOR														
A C T I V I T Y N O	T R A N S M I T T A L N O	S P E C S E C T	DESCRIPTION	P A R A G # R A P H	G O V T C L A S S I F I C A T I O N R	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	APPROVING AUTHORITY		DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	A C T I O N C O D E	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR	REMARKS	
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		02741	Testing Laboratory	3.5	G															
		02748	SD-03 Product Data																	
			Product and Data Sheet		G COR															
		02754	SD-03 Product Data																	
			Paving																	
			Mixture Proportions		G AE															
		02763	SD-02 Shop Drawings																	
			Temporary Striping Layout		G COR															
			Striping Layout		G COR															
			SD-07 Certificates																	
			Volatile Organic Compound (VOC)																	
			Materials																	
		02842	SD-03 Product Data																	
			Slotted Rail Terminal		G AE															
		02920	SD-01 Preconstruction Submittals																	
			Experience for Native Grasses																	
			SD-03 Product Data																	
			Manufacturer's Literature																	
			SD-04 Samples																	
			Samples																	
			SD-06 Test Reports																	
			Soil Test																	
			Seed Test																	
			Quantity Check																	
			Maintenance Record																	

SUBMITTAL REGISTER

CONTRACT NO.
DACW37-02-B-0016

TITLE AND LOCATION Breckenridge Stage 1						CONTRACTOR											
A C T I V I T Y N O	T R A N S M I T T A L N O	S P E C S E C T	DESCRIPTION	P A R A G R A P H	C L A S S I F I C A T I O N R	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		DATE FWD TO APPR AUTH/	APPROVING AUTHORITY			MAILED TO CONTR/	REMARKS	
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		02920	Water Test														
			SD-07 Certificates														
			Seed Order for Native Grasses														
			Certificates of Compliance														
		03100	SD-02 Shop Drawings														
			Formwork	3.1.1													
			SD-03 Product Data														
			Design	1.3													
			Form Materials	2.1													
			Form Releasing Agents	2.1.6													
			SD-04 Samples														
			Fiber Voids	2.1.7													
			SD-07 Certificates														
			Fiber Voids	2.1.7													
		03150	SD-02 Shop Drawings														
			Waterstops	2.4													
			SD-03 Product Data														
			Preformed Expansion Joint Filler	2.2													
			Sealant	2.3													
			Waterstops	2.4													
			SD-04 Samples														
			Lubricant for Preformed	2.3.2													
			Compression Seals														
			Field-Molded Type	2.3.4													
			Non-metallic Materials	2.4.2													
			SD-07 Certificates														

SUBMITTAL REGISTER

CONTRACT NO.
DACW37-02-B-0016

TITLE AND LOCATION Breckenridge Stage 1						CONTRACTOR											
A C T I V I T Y N O	T R A N S M I T T A L N O	S P E C S E C T	DESCRIPTION	P A R A G R A P H	G O V E R N M E N T C L A S S I F I C A T I O N S I F I C A R E I V O W N E R	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR	REMARKS	
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		03150	Preformed Expansion Joint Filler	2.2													
			Sealant	2.3													
			Waterstops	2.4													
			Mn/DOT Submittal Requirements		G												
		03200	SD-02 Shop Drawings														
			Reinforcement	3.1	G AE												
			SD-03 Product Data														
			Welding	1.3													
			SD-07 Certificates														
			Reinforcing Steel	2.2													
		03300	SD-01 Preconstruction Submittals														
			Concrete Operation Plan		G COR												
			Cold Weather Plan		G COR												
			Hot Weather Plan		G COR												
			Joint Treatment Plan														
			SD-02 Shop Drawings														
			Shop Drawings		G AE												
			SD-03 Product Data														
			Concrete Mixture Design		G AE												
			SD-07 Certificates														
			Manufacturer's Certificates														
			Qualifications														
			Batch Tickets														
		05055	SD-02 Shop Drawings														
			Detail Drawings	1.3	G AE												
			SD-03 Product Data														

SUBMITTAL REGISTER

CONTRACT NO.
DACW37-02-B-0016

TITLE AND LOCATION Breckenridge Stage 1						CONTRACTOR											
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		05055	Welding of Structural Steel	2.2.2.1													
			Welding of Aluminum														
			Structural Steel Welding Repairs	2.3.4													
			Materials Orders	2.1.1													
			Materials List	2.1.2													
			Shipping Bill	2.1.3													
			SD-06 Test Reports														
			Tests, Inspections, and Verifications	2.3													
			SD-07 Certificates														
			Qualification of Welders and Welding Operators	1.4													
			Application Qualification for Steel Studs														
		05502	SD-02 Shop Drawings														
			Shop Fabricated Metal Items	2.2	G AE												
			SD-03 Product Data														
			Miscellaneous Metals and Standard Metal Articles	2.1													
			SD-04 Samples														
			Miscellaneous Metals and Standard Metal Articles	2.1	G												
			SD-06 Test Reports														
			Miscellaneous Metals and Standard Metal Articles	2.1													
		09900	SD-03 Product Data														

SUBMITTAL REGISTER

CONTRACT NO.
DACW37-02-B-0016

TITLE AND LOCATION Breckenridge Stage 1						CONTRACTOR											
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		09900	Coating	2.1													
			Manufacturer's Technical Data	2.1													
			Sheets														
			SD-04 Samples														
			Color	1.8	G AE												
			SD-07 Certificates														
			Applicator's qualifications														
			Qualification Testing	1.3.1.2													
			SD-08 Manufacturer's Instructions														
			Application instructions														
			Mixing	3.4.2													
			Manufacturer's Material Safety	1.6.2													
			Data Sheets														
			SD-10 Operation and Maintenance														
			Data														
			Coatings:	2.1													
		10430	SD-02 Shop Drawings														
			Approved Detail Drawings		G AE												
			SD-03 Product Data														
			Modular Exterior Signage System														
			Installation														
			Exterior Signs														
			SD-10 Operation and Maintenance														
			Data														
			Protection and Cleaning														

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01355

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 DEFINITIONS
 - 1.2.1 Environmental Pollution and Damage
 - 1.2.2 Environmental Protection
 - 1.2.3 Contractor Generated Hazardous Waste
 - 1.2.4 Land Application for Discharge Water
 - 1.2.5 Pesticide
 - 1.2.6 Pests
 - 1.2.7 Surface Discharge
 - 1.2.8 Waters of the United States
 - 1.2.9 Wetlands
- 1.3 GENERAL REQUIREMENTS
- 1.4 SUBCONTRACTORS
- 1.5 PAYMENT
- 1.6 SUBMITTALS
- 1.7 ENVIRONMENTAL PROTECTION PLAN
 - 1.7.1 Compliance
 - 1.7.2 Contents
 - 1.7.3 Appendix
- 1.8 PROTECTION FEATURES
- 1.9 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS
- 1.10 NOTIFICATION

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

- 3.1 PERMITS
- 3.2 LAND RESOURCES
 - 3.2.1 Work Area Limits
 - 3.2.2 Landscape
 - 3.2.3 Erosion and Sediment Controls
 - 3.2.4 Contractor Facilities and Work Areas
- 3.3 WATER RESOURCES
 - 3.3.1 Cofferdams, Diversions, and Dewatering Operations
 - 3.3.2 Stream Crossings
 - 3.3.3 Wetlands
- 3.4 AIR RESOURCES

- 3.4.1 Particulates
- 3.4.2 Odors
- 3.4.3 Sound Intrusions
- 3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL
 - 3.5.1 Solid Wastes
 - 3.5.2 Chemicals and Chemical Wastes
 - 3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials
 - 3.5.4 Fuel and Lubricants
 - 3.5.5 Waste Water
- 3.6 RECYCLING AND WASTE MINIMIZATION
- 3.7 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES
- 3.8 BIOLOGICAL RESOURCES
- 3.9 PESTICIDES
 - 3.9.1 Pesticide Delivery and Storage
 - 3.9.2 Qualifications
 - 3.9.3 Pesticide Handling Requirements
 - 3.9.4 Application
- 3.10 PREVIOUSLY USED EQUIPMENT
- 3.11 MAINTENANCE OF POLLUTION FACILITIES
- 3.12 TRAINING OF CONTRACTOR PERSONNEL
- 3.13 POST CONSTRUCTION CLEANUP

-- End of Section Table of Contents --

SECTION 01355

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

33 CFR 328	Definitions
40 CFR 68	Chemical Accident Prevention Provisions
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171 - 178	Hazardous Materials Regulations

ENGINEERING MANUALS (EM)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual
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US ARMY CORPS OF ENGINEERS TECHNICAL REPORT

WETLAND MANUAL	Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1
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1.2 DEFINITIONS

1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical,

or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

1.2.4 Land Application for Discharge Water

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

1.2.5 Pesticide

Pesticide is defined as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

1.2.6 Pests

The term "pests" means arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds and other organisms (except for human or animal disease-causing organisms) that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.

1.2.7 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters

that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

1.2.8 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

1.2.9 Wetlands

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs. Official determination of whether or not an area is classified as a wetland must be done in accordance with WETLAND MANUAL.

1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.5 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Environmental Protection Plan; G, ENV

The environmental protection plan shall be prepared in accordance with PARAGRAPH: ENVIRONMENTAL PROTECTION PLAN.

1.7 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.7.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.7.2 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

- a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.
- b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.
- c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
- d. Description of the Contractor's environmental protection personnel training program.
- e. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure that the

control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.

f. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.

g. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

h. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

i. Drawing showing the location of borrow areas.

j. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer, and the local Fire Department for flammable materials, in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of

an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

k. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction.

l. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.

m. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

n. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

o. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

p. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and

protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

q. A pesticide treatment plan shall be included and updated, as information becomes available. The plan shall include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements.

r. The Contractor shall prepare a listing of resources needing protecting, (i.e., trees, shrubs, vines, grasses and ground cover, landscape features, air and water quality, fish and wildlife, soil, and historical, archaeological, and cultural resources); and what methods will be used to protect these resources.

s. Environmental monitoring plans for the job site, including land, water, air, and noise monitoring.

t. Plans for restoration of landscape damage.

1.7.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.8 PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause

to the Contractor's work under the contract.

1.9 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.10 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping (suspending) all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law. The failure of the Contracting Officer to notify the Contractor of any noncompliance with Federal, State, or local environmental laws or regulations, permits, or the Contractor's Environmental Protection Plan shall not relieve the Contractor of the duty to comply with those laws or regulations, permits, or the Contractor's Environmental Protection Plan.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 PERMITS

The Contractor is responsible for obtaining all applicable permits or licenses (those not obtained by the Government). The Section 404 permit obtained by the Government is available for inspection in the Office of the District Engineer, Army Corps of Engineers Centre, 190 Fifth Street East, St. Paul, Minnesota 55101-1638. The Contractor shall be responsible for implementing the terms and requirements of the permits held by the Contractor or the Government.

The Protected Waters Permit, obtained by the Local Sponsor, must be available before the Contractor is allowed to work in the vicinity of the Ottertail River.

3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction,

the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.2.3 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs). BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. Any temporary measures shall be removed after the area has been stabilized.

3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to

prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.

3.3.1 Cofferdams, Diversions, and Dewatering Operations

Construction operations for dewatering, water return for hydraulic dredging, removal of cofferdams, tailrace excavation, and tunnel closure shall be controlled at all times to maintain compliance with existing State water quality standards and designated uses of the surface water body. The Contractor shall plan its operations and perform all work necessary to minimize adverse impact, such as water turbidity, on the habitat for wildlife and on water quality for downstream use.

3.3.2 Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State, and local governments.

3.3.3 Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands, unless authorized herein. The Contractor shall be responsible for the protection of wetlands shown on the drawings. Authorization to enter specific wetlands identified shall not relieve the Contractor from any obligation to protect other wetlands within, adjacent to, or in the vicinity of the construction site and associated boundaries.

3.4 AIR RESOURCES

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

3.4.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas

within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.

3.4.2 Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.4.3 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with state rules.

3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.5.1 Solid Wastes

Solid wastes (excluding dredge material and clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate.

3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations.

The Contractor shall transport Contractor generated hazardous waste off Government property in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility.

3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. The Contractor shall provide containment around fueling areas to ensure that spills do not reach waters of the State. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations.

3.5.5 Waste Water

Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways.

3.6 RECYCLING AND WASTE MINIMIZATION

The Contractor shall participate in State and local government sponsored recycling programs.

3.7 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area are shown on the drawings, or will be designated by the Contracting Officer, if any have been identified. The Contractor shall protect these resources and shall be responsible for their preservation during the life of the Contract. If during excavation or other

construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.8 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.9 PESTICIDES

3.9.1 Pesticide Delivery and Storage

Pesticides shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses. Pesticides shall be stored according to manufacturer's instructions and under lock and key when unattended.

3.9.2 Qualifications

For the application of pesticides, the Contractor shall use the services of a subcontractor whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.9.3 Pesticide Handling Requirements

The Contractor shall formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions and shall use the clothing and personal protective equipment specified on the labeling for use during all phases of the application. Material Safety Data Sheets (MSDS) shall be available for all pesticide products.

3.9.4 Application

Pesticides shall be applied by a State Certified Pesticide Applicator in accordance with EPA label restrictions and recommendation. The Certified Applicator shall wear clothing and personal protective equipment as

specified on the pesticide label. Water used for formulating shall only come from locations designated by the Contracting Officer. The Contractor shall not allow the equipment to overflow. Prior to application of pesticide, all equipment shall be inspected for leaks, clogging, wear, or damage and shall be repaired prior to being used.

3.10 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

3.11 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.12 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.13 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause CLEANING UP. The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01356

STORM WATER POLLUTION PREVENTION MEASURES

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 GENERAL
- 1.3 SUBMITTALS
- 1.4 EROSION AND SEDIMENT CONTROLS
 - 1.4.1 Stabilization Practices
 - 1.4.1.1 Unsuitable Conditions
 - 1.4.1.2 No Activity for Less Than 21 Days
 - 1.4.2 Structural Practices
 - 1.4.2.1 Silt Fences
 - 1.4.2.2 Straw Bales
 - 1.4.2.3 Diversion Dikes

PART 2 PRODUCTS

- 2.1 COMPONENTS FOR SILT FENCES
 - 2.1.1 Filter Fabric
 - 2.1.2 Silt Fence Stakes and Posts
 - 2.1.3 Mill Certificate or Affidavit
 - 2.1.4 Identification Storage and Handling
- 2.2 COMPONENTS FOR STRAW BALES

PART 3 EXECUTION

- 3.1 INSTALLATION OF SILT FENCES
- 3.2 INSTALLATION OF STRAW BALES
- 3.3 MAINTENANCE
 - 3.3.1 Silt Fence Maintenance
 - 3.3.2 Straw Bale Maintenance
 - 3.3.3 Diversion Dike Maintenance
- 3.4 INSPECTIONS
 - 3.4.1 General
 - 3.4.2 Inspections Details
 - 3.4.3 Inspection Reports

-- End of Section Table of Contents --

SECTION 01356

STORM WATER POLLUTION PREVENTION MEASURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 4439	(1997) Standard Terminology for Geosynthetics
ASTM D 4491	(1996) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1996)) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1995) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(1995) Identification, Storage, and Handling of Geosynthetic Rolls

1.2 GENERAL

The Contractor shall implement the storm water pollution prevention measures specified in this section in a manner which will meet the requirements of Section 01567 MINNESOTA POLLUTANT DISCHARGE ELIMINATION SYSTEM, and the requirements of the National Pollution Discharge Elimination System (NPDES) permit attached to that Section. Additionally, the Contractor shall meet the requirements of Section 01355 ENVIRONMENTAL PROTECTION. Where Sections have different requirements, the most stringent listed will apply.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Mill Certificate or Affidavit

Certificate attesting that the Contractor has met all specified requirements.

1.4 EROSION AND SEDIMENT CONTROLS

The controls and measures required by the Contractor are described below.

1.4.1 Stabilization Practices

The stabilization practices to be implemented shall include temporary seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, erosion control matts, protection of trees, preservation of mature vegetation, etc. On the daily CQC Report, the Contractor shall record the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, embankment, and grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in Paragraphs UNSUITABLE CONDITIONS and NO ACTIVITY FOR LESS THAN 21 DAYS, stabilization practices shall be initiated as soon as practicable, but no more than 14 days, in any portion of the site where construction activities have temporarily or permanently ceased.

1.4.1.1 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity permanently ceases is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable.

1.4.1.2 No Activity for Less Than 21 Days

Where construction activity will resume on a portion of the site within 21 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 21 days), then stabilization practices do not have to be initiated on that portion of the site by the fourteenth day after construction activity temporarily ceased.

1.4.2 Structural Practices

Structural practices shall be implemented to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Structural practices shall include the following devices.

1.4.2.1 Silt Fences

The Contractor shall provide silt fences as a temporary structural practice

to minimize erosion and sediment runoff. Silt fences shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Final removal of silt fence barriers shall be upon approval by the Contracting Officer.

1.4.2.2 Straw Bales

The Contractor shall provide bales of straw as a temporary structural practice to minimize erosion and sediment runoff. Bales shall be properly placed to effectively retain sediment immediately after completing each phase of work (e.g., clearing and grubbing, excavation, embankment, and grading) in each independent runoff area (e.g., after clearing and grubbing in a area between a ridge and drain, bales shall be placed as work progresses, bales shall be removed/replaced/relocated as needed for work to progress in the drainage area). Final removal of straw bale barriers shall be upon approval by the Contracting Officer. Rows of bales of straw shall be provided as follows:

- a. Along the downhill perimeter edge of all areas disturbed.
- b. Along the top of the slope or top bank of drainage ditches, channels, swales, etc. that traverse disturbed areas.
- c. Along the toe of all cut slopes and fill slopes of the construction areas.
- d. Perpendicular to the flow in the bottom of existing drainage ditches, channels, swales, etc. that traverse disturbed areas or carry runoff from disturbed areas. Rows shall be spaced a maximum of 200 feet apart.
- e. Perpendicular to the flow in the bottom of new drainage ditches, channels, and swales. Rows shall be spaced a maximum of 200 feet apart.
- f. At the entrance to culverts that receive runoff from disturbed areas.

1.4.2.3 Diversion Dikes

Diversion dikes shall have a maximum channel slope of 2 percent and shall be adequately compacted to prevent failure. The minimum height measured from the top of the dike to the bottom of the channel shall be 18 inches. The minimum base width shall be 6 feet and the minimum top width shall be 2 feet. The Contractor shall ensure that the diversion dikes are not damaged by construction operations or traffic.

PART 2 PRODUCTS

2.1 COMPONENTS FOR SILT FENCES

2.1.1 Filter Fabric

The geotextile shall comply with the requirements of ASTM D 4439, and shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	ASTM D 4632	100 lbs. min.
Elongation (%)		30 % max.
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

2.1.2 Silt Fence Stakes and Posts

The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 inches by 2 inches when oak is used and 4 inches by 4 inches when pine is used, and shall have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 5 feet.

2.1.3 Mill Certificate or Affidavit

A mill certificate or affidavit shall be provided attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. The mill certificate or affidavit shall specify the actual Minimum Average Roll Values and shall identify the fabric supplied by roll identification numbers. The Contractor shall submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

2.1.4 Identification Storage and Handling

Filter fabric shall be identified, stored and handled in accordance with ASTM D 4873.

2.2 COMPONENTS FOR STRAW BALES

The straw in the bales shall be stalks from oats, wheat, rye, barley, rice, or from grasses such as byhalia, bermuda, etc., furnished in air dry

condition. The bales shall have a standard cross section of 14 inches by 18 inches. All bales shall be either wire-bound or string-tied. The Contractor may use either wooden stakes or steel posts to secure the straw bales to the ground. Wooden stakes utilized for this purpose, shall have a minimum dimensions of 2 inches x 2 inches in cross section and shall have a minimum length of 3 feet. Steel posts (standard "U" or "T" section) utilized for securing straw bales, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 3 feet.

PART 3 EXECUTION

3.1 INSTALLATION OF SILT FENCES

Silt fences shall extend a minimum of 16 inches above the ground surface and shall not exceed 34 inches above the ground surface. Filter fabric shall be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together at a support post, with a minimum 6 inch overlap, and securely sealed. A trench shall be excavated approximately 4 inches wide and 4 inches deep on the upslope side of the location of the silt fence. The 4-inch by 4-inch trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be removed upon approval by the Contracting Officer.

3.2 INSTALLATION OF STRAW BALES

Straw bales shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. Straw bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings. The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked and chinked (gaps filled by wedging with straw), the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 4 inches against the uphill side of the barrier. Loose straw shall be scattered over the area immediately uphill from a straw bale barrier to increase barrier efficiency. Each bale shall be securely anchored by at least two stakes driven through the bale. The first stake or steel post in each bale shall be driven toward the previously laid bale to force the bales together. Stakes or steel pickets shall be driven a minimum 18 inches deep into the ground to securely anchor the bales.

3.3 MAINTENANCE

The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. The following procedures shall be followed to maintain the protective measures.

3.3.1 Silt Fence Maintenance

Silt fences shall be inspected in accordance with paragraph INSPECTIONS. Any required repairs shall be made promptly. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, it shall be removed. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall receive erosion control if required by Section 02370.

3.3.2 Straw Bale Maintenance

Straw bale barriers shall be inspected in accordance with paragraph INSPECTIONS. Close attention shall be paid to the repair of damaged bales, end runs and undercutting beneath bales. Necessary repairs to barriers or replacement of bales shall be accomplished promptly. Sediment deposits shall be removed when deposits reach one-half of the height of the barrier.

Bale rows used to retain sediment shall be turned uphill at each end of each row. When a straw bale barrier is no longer required, it shall be removed. The immediate area occupied by the bales and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall be seeded in accordance with Section 02920 SEEDING, SODDING, AND TOPSOIL.

3.3.3 Diversion Dike Maintenance

Diversion dikes shall be inspected in accordance with paragraph INSPECTIONS. Close attention shall be paid to the repair of damaged diversion dikes and necessary repairs shall be accomplished promptly. When diversion dikes are no longer required, they shall be shaped to an acceptable grade. The areas disturbed by this shaping shall be seeded in accordance with Section 02920 SEEDING, SODDING, AND TOPSOIL.

3.4 INSPECTIONS

3.4.1 General

The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least once every seven (7) calendar days and within 24 hours of the end of any storm that produces 0.5 inches or more rainfall at the site. Where sites have been finally stabilized, such inspection shall be conducted at least once every month.

3.4.2 Inspections Details

Disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for,

pollutants entering the drainage system. Erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles exit the site shall be inspected for evidence of offsite sediment tracking.

3.4.3 Inspection Reports

For each inspection conducted, the Contractor shall prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. The report shall be furnished to the Contracting Officer within 24 hours of the inspection as a part of the Contractor's daily CQC REPORT. A copy of the inspection report shall be maintained on the job site.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

1.2 ORDERING INFORMATION

-- End of Section Table of Contents --

SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization, (e.g. ASTM B 564 Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number. The designations "AOK" and "LOK" are for administrative purposes and should not be used when ordering publications.

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Internet: www.ari.org

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-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

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CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 TRAINING
- 1.4 PAYMENT

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

- 3.1 GENERAL REQUIREMENTS
- 3.2 QUALITY CONTROL PLAN
 - 3.2.1 General
 - 3.2.2 Content of the CQC Plan
 - 3.2.3 Acceptance of Plan
 - 3.2.4 Notification of Changes
- 3.3 MEETINGS
 - 3.3.1 Coordination Meeting
 - 3.3.2 Progress Meetings
- 3.4 QUALITY CONTROL ORGANIZATION
 - 3.4.1 Personnel Requirements
 - 3.4.2 CQC System Manager
 - 3.4.3 Additional Requirement
 - 3.4.4 Organizational Changes
- 3.5 SUBMITTALS AND DELIVERABLES
- 3.6 CONTROL
 - 3.6.1 Preparatory Phase
 - 3.6.2 Initial Phase
 - 3.6.3 Follow-up Phase
 - 3.6.4 Additional Preparatory and Initial Phases
- 3.7 TESTS
 - 3.7.1 Testing Procedure
 - 3.7.2 Testing Laboratories
 - 3.7.2.1 Capability Check
 - 3.7.2.2 Capability Recheck
 - 3.7.3 On-site Laboratory
 - 3.7.4 Furnishing or Transportation of Samples for Testing
- 3.8 COMPLETION INSPECTION
 - 3.8.1 Punch-Out Inspection
 - 3.8.2 Pre-Final Inspection
 - 3.8.3 Final Acceptance Inspection

- 3.9 DOCUMENTATION
- 3.10 SAMPLE FORMS
- 3.11 NOTIFICATION OF NONCOMPLIANCE

-- End of Section Table of Contents --

SECTION 01451

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3740	(1999) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E 329	(1998) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-08 Manufacturer's Instructions

Contractor Quality Control Plan; G, COR

The quality control plan shall be prepared in accordance with Paragraph QUALITY CONTROL PLAN.

Laboratory Quality Management Manual

The manual as specified in Paragraph TESTS - TESTING LABORATORIES - CAPABILITY CHECK shall be submitted.

SD-18 Records

Documentation of Work; G, COR

- a. Construction Quality Control Management Report
- b. CQC Report

c. Preparatory Phase Checklist

d. Initial Phase Checklist

Daily records and weekly reports shall be prepared in accordance with Paragraph DOCUMENTATION.

1.3 TRAINING

Provide training for four (4) U.S. Army Corps of Engineers personnel to attend Minnesota Department of Transportation (Mn/DOT) Technical Certification Program (TCP) courses for inspection certification in bridges, bituminous, concrete, grading, and base. Training should allow for all four Corps of Engineers personnel to become Mn/DOT certified in all areas referenced.

1.4 PAYMENT

The Contractor shall be responsible for the work of this section, without any direct compensation being made other than the payment received for contract items.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site.

3.2 QUALITY CONTROL PLAN

3.2.1 General

The Contractor shall furnish for review by the Government, not later than 15 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel,

procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 30 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

3.2.2 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:

- a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent or someone higher in the Contractor's organization.
- b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.
- c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.
- d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01330 SUBMITTAL PROCEDURES.
- e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities will be approved by the Contracting Officer.)
- f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
- g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified

deficiencies have been corrected.

- h. Reporting procedures, including proposed reporting formats.
- i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.
- j. Quality control plan requirements in accordance with Section 02741 HOT-MIX ASPHALT FOR ROADS, shall be incorporated into the overall Quality Control Plan. The more stringent requirement between this Section and Section 02741 HOT-MIX ASPHALT FOR ROADS will apply.

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 MEETINGS

3.3.1 Coordination Meeting

After the Preconstruction Conference, before start of construction, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 10 calendar days prior to the Coordination Meeting.

During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.3.2 Progress Meetings

The Contractor shall host weekly progress meetings throughout the construction contract and as required by the Contracting Officer to discuss Quality Control Items and issues related to the construction. The meeting shall be attended at a minimum by the Contractor Quality Control Representative and the Contractor's Field Superintendent.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of the CQC staff. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be maintained at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a person with a minimum of 10 years experience in related duties on construction work. The CQC System Manager shall be computer literate and capable of utilizing/executing the RMS requirements of Section 01312 QUALITY CONTROL SYSTEM (QCS). This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall have no duties outside of the CQC System Manager. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager.

3.4.3 Additional Requirement

In addition to the above qualifications, the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered through the Government in the Minneapolis - St. Paul, Minnesota metropolitan area.

3.4.4 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times.

When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in Section 01330 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of work as follows:

3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

- a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.
- b. A review of the contract drawings.
- c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
- d. Review of provisions that have been made to provide required control inspection and testing.
- e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
- f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
- g. A review of the appropriate activity hazard analysis to assure safety requirements are met.
- h. Discussion of procedures for controlling quality of the work

including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

- i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.
- j. Discussion of the initial control phase.
- k. The Government shall be notified at least 48 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

- a. A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.
- b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.
- c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.
- d. Resolve all differences.
- e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
- f. The Government shall be notified at least 48 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract

requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a testing laboratory meeting the requirements listed under Paragraph CAPABILITY CHECK, or establish a testing laboratory at the project site meeting those requirements. The Contractor shall perform the following activities and record and provide the following data:

- a. Verify that testing procedures comply with contract requirements.
- b. Verify that facilities and testing equipment are available and comply with testing standards.
- c. Check test instrument calibration data against certified standards.
- d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
- e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

3.7.2.1 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329. The Contractor shall submit a Quality Management Manual meeting the requirements of ASTM D 3740 and ASTM E 329 for each laboratory to be used, including on-site project laboratories.

3.7.2.2 Capability Recheck

If the selected laboratory fails the capability check, the Contractor will be assessed a charge of \$1000.00 to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

3.7.3 On-site Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4 Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials shall be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the Contracting Officer. Coordination for each specific test, exact delivery location, and dates will be made with the Contracting Officer.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the Special Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected.

Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups, and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

- a. Contractor/subcontractor and their area of responsibility.
- b. Operating plant/equipment with hours worked, idle, or down for repair.
- c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.
- d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.

- e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.
- f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.
- g. Off-site surveillance activities, including actions taken.
- h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- i. Instructions given/received and conflicts in plans and/or specifications.
- j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 SAMPLE FORMS

The following sample forms are enclosed at the end of this section:

- a. Construction Quality Control (CQC) Management Report
- b. Preparatory Phase Checklist
- c. Initial Phase Checklist

3.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- End of Section --

CONSTRUCTION QUALITY CONTROL MANAGEMENT REPORT

Contractor Production

Contractor's Name

Daily Report No.: _____

Date: _____

Contract No.: _____

Project Title & Location: _____

Weather: _____ Precipitation: _____ in. Temp.: _____ Min. _____ Max.

1. Contract/Subcontractors and Area of Responsibility:

NUMBER:	TRADE	:	HOURS	:	EMPLOYER	:	LOCATION/DESCRIPTION OF WORK
:	:	:	:	:	:	:	
:	:	:	:	:	:	:	
:	:	:	:	:	:	:	
:	:	:	:	:	:	:	
:	:	:	:	:	:	:	
:	:	:	:	:	:	:	
:	:	:	:	:	:	:	
:	:	:	:	:	:	:	
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:	:	:	:	:	:	:	
:	:	:	:	:	:	:	
:	:	:	:	:	:	:	
:	:	:	:	:	:	:	
:	:	:	:	:	:	:	
:	:	:	:	:	:	:	
:	:	:	:	:	:	:	

2. Operating Plant or Equipment. (Not hand tools)

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

CQC Report

1. Work performed today: (Indicate location and description of work performed by prime and/or subcontractors by letter in table above).

2. Results of control activities: (Indicate whether P - Preparatory, I - Initial, or F - Follow-up Phase. When a P or I meeting is conducted, complete attachment 1-A or 1-B, respectively. When network analysis system is used, identify work by use of I-J numbers)

3. Test performed as required by plans and/or specifications:

4. Material received:

CQC Report (Cont'd)

5. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

6. Off-site surveillance activities, including action taken:

7. Job safety: (Report violations; Corrective instructions given; Corrective actions taken).

8. Remarks: (Instructions received or given. Conflict(s) in Plans and/or Specifications)

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.

CQC System Manager

PREPARATORY PHASE CHECKLIST

Contract No.: _____ Date: _____
Definable Feature: _____ Spec Section: _____

Government Rep Notified _____ Hours in Advance Yes ____ No ____

I. Personnel Present.

	Name	Position	Company/Government
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____

(List additional personnel on reverse side)

II. Submittals.

1. Review submittals and/or submittal log 4288. Have all submittals been approved? Yes ____ No ____

If No, what items have not been submitted?

a. _____
b. _____
c. _____
2. Are all materials on hand? Yes ____ No ____
a. _____
b. _____
c. _____

3. Check approved submittals against delivered material. (This should be done as material arrives).

Comments: _____

III. Material Storage.

Are materials stored properly? Yes ____ No ____

If No, what action is taken?

Preparatory Phase Checklist (Cont'd)

IV. Specifications.

1. Review each paragraph of specifications.

2. Discuss procedure for accomplishing the work.

3. Clarify any differences.

V. Preliminary Work.

Ensure preliminary work is correct.

If not, what action is taken? _____

VI. Testing.

1. Identify test to be performed, frequency, and by whom.

2. When required? _____

3. Where required? _____

4. Review Testing Plan. _____

5. Has test facilities been approved? _____

VII. Safety.

1. Review applicable portion of EM 385-1-1. _____

2. Activity Hazard Analysis approved? Yes _____ No _____

VIII. Corps of Engineers comments during meeting.

CQC System Manager

INITIAL PHASE CHECKLIST

Contract No.: _____ Date: _____

Definable Feature: _____

Government Rep Notified: _____ Hours in Advance Yes _____ No _____

I. Personnel Present:

	Name	Position	Company/Government
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____

(List additional personnel on reverse side)

II. Identify full compliance with procedures identified at preparatory. Coordinate plans, specifications, and submittals.

Comments: _____

III. Preliminary Work. Ensure preliminary work is complete and correct. If not, what action is taken? _____

IV. Establish Level of Workmanship.

1. Where is work located? _____
2. Is a sample panel required? Yes _____ No _____
3. Will the initial work be considered as a sample? Yes _____ No _____
(If yes, maintain in present condition as long as possible).

V. Resolve any Differences.

Comments: _____

Review job conditions using EM 385-1-1 and job hazard analysis.

Comments: _____

CQC System Manager

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01500

TEMPORARY CONSTRUCTION FACILITIES

PART 1 GENERAL

- 1.1 SUBMITTALS
- 1.2 AVAILABILITY AND USE OF UTILITY SERVICES
 - 1.2.1 Temporary Electrical Facilities
 - 1.2.2 Sanitation
 - 1.2.3 Telephone
- 1.3 PROTECTION AND MAINTENANCE OF TRAFFIC
 - 1.3.1 Haul Roads
 - 1.3.2 Barricades and Traffic Control Devices
 - 1.3.3 Planned Detours
 - 1.3.4 Contracting Officer's Authority
- 1.4 CONTRACTOR'S TEMPORARY FACILITIES
 - 1.4.1 Administrative Field Offices
 - 1.4.2 Staging Area
- 1.5 PLANT COMMUNICATION
- 1.6 TEMPORARY PROJECT SAFETY FENCING
- 1.7 PAYMENT

PART 2 PRODUCTS

- 2.1 BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN
 - 2.1.1 Bulletin Board
 - 2.1.2 Project and Safety Signs
- 2.2 GOVERNMENT FIELD OFFICE
 - 2.2.1 Location
 - 2.2.2 Construction
 - 2.2.3 Utilities.
 - 2.2.4 Furnishings
 - 2.2.5 Furniture
 - 2.2.6 Office Equipment
 - 2.2.7 Maintenance.

PART 3 EXECUTION

- 3.1 CLEANUP
- 3.2 RESTORATION OF STORAGE AREA

-- End of Section Table of Contents --

SECTION 01500

TEMPORARY CONSTRUCTION FACILITIES

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Site Plan;

The Contractor shall prepare a site plan indicating the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Any areas which may have to be graveled to prevent the tracking of mud shall also be identified. The Contractor shall also indicate if the use of a supplemental or other staging area is desired.

Government Field Office;

The Contractor shall submit a preliminary plan and description of the mobile office facilities which it proposes to furnish prior to proceeding with procurement thereof.

1.2 AVAILABILITY AND USE OF UTILITY SERVICES

1.2.1 Temporary Electrical Facilities

The Contractor shall be responsible for coordination and costs for electrical power required for the Contractor's operations, including all costs for utility company hookup, installation/dismantling of transformers and distribution lines. In general, the Contractor shall establish its own service connection with the utility company. If the Contractor proposes to use an existing Government service connection, a request shall be submitted for approval to verify the Contractor's use will not interfere with operation of the facilities, and the monthly service fees will be paid for in whole (including Government power consumption) by the Contractor.

1.2.2 Sanitation

The Contractor shall provide and maintain within the construction area field-type sanitary facilities in accordance with EM 385-1-1. These facilities shall include but not be limited to toilet, washing, and drinking water facilities.

1.2.3 Telephone

The Contractor shall make arrangements and pay all costs for their telephone facilities desired. Government personnel will not take or deliver messages for the Contractor.

1.3 PROTECTION AND MAINTENANCE OF TRAFFIC

During construction the Contractor shall provide access and temporary relocated roads as necessary to maintain traffic. The Contractor shall maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the State and local authorities having jurisdiction. The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads.

1.3.1 Haul Roads

The Contractor shall, at its own expense, construct access and haul roads necessary for proper prosecution of the work under this contract. Haul roads shall be constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided. The Contractor shall provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by the Contracting Officer. Lighting shall be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations. Upon completion of the work, haul roads designated by the Contracting Officer shall be removed.

1.3.2 Barricades and Traffic Control Devices

The Contractor shall erect and maintain temporary barricades to limit public access to hazardous areas. Such barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night. All traffic control devices and methods shall conform to the Minnesota Manual on Uniform Traffic Control Devices (MMUTCD), the Minnesota Standard

Signs Manuals Parts I, II, and III and the appropriate Material Specifications.

1.3.3 Planned Detours

When the Plans, Special Provisions, or orders from the Contracting Officer provide for closure of the Project or specified portions thereof to through traffic, the responsibility to maintain those detour roads will be by others, without any expense to the Contractor. Any Contractor caused damage to these detour roads will be repaired by the Contractor at his expense.

1.3.4 Contracting Officer's Authority

Acceptance or rejection, at any time, of a traffic control device provided by the Contractor but not incorporated in the final construction, will be subject to the Contracting Officer's judgement as to acceptable day or night performance. The Contractor is required to take all actions necessary to remedy the rejected traffic control device to the Contracting Officer's satisfaction.

1.4 CONTRACTOR'S TEMPORARY FACILITIES

1.4.1 Administrative Field Offices

The Contractor shall provide and maintain administrative field office facilities within the construction area at the designated site. Government office and warehouse facilities will not be available to the Contractor's personnel.

1.4.2 Staging Area

The boundary limits of the grounds made available for the Contractor's use during the life of the contract are shown on the drawings as Work Limits. Trailers, materials, or equipment shall not be placed or stored outside the work limits.

1.5 PLANT COMMUNICATION

Whenever the Contractor has the individual elements of its plant so located that operation by normal voice between these elements is not satisfactory, the Contractor shall install a satisfactory means of communication, such as telephone or other suitable devices. The devices shall be made available for use by Government personnel.

1.6 TEMPORARY PROJECT SAFETY FENCING

As soon as practicable, but not later than 15 days after the date established for commencement of work, the Contractor shall furnish and erect temporary project safety fencing at the work site. The safety fencing shall be a high visibility orange colored, high density polyethylene grid or approved equal, a minimum of 42 inches high, supported and tightly secured to steel posts located on maximum 10 foot centers, generally located to encompass the active construction areas. The safety

fencing shall be maintained by the Contractor during the life of the contract and, upon completion and acceptance of the work, shall become the property of the Contractor and shall be removed from the work site.

1.7 PAYMENT

The Contractor shall be responsible for the work of this Section, without any direct compensation being made other than payment received for contract items or specifically included in the appropriate bid item.

PART 2 PRODUCTS

2.1 BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

2.1.1 Bulletin Board

Immediately upon beginning of work, the Contractor shall provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. The bulletin board shall be located at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Legible copies of the aforementioned data shall be displayed until work is completed. Upon completion of work the bulletin board shall be removed by and remain the property of the Contractor.

2.1.2 Project and Safety Signs

The Contractor shall furnish and erect a Project sign and a Safety sign in a location selected by the Contracting Officer at the project site within 15 days after receipt of the notice to proceed. The requirements for the signs and their content shall be as shown on the drawings at the end of this section. The data required by the safety sign shall be corrected daily. Signs shall be maintained throughout the construction period, and upon completion of the project, the signs shall be removed from the site. The PROJECT DESCRIPTION and PROJECT NAME shall be as follows:

PROJECT DESCRIPTION: Flood Control Project
Breckenridge, Minnesota

PROJECT NAME: Breckenridge Flood Control, Stage I

2.2 GOVERNMENT FIELD OFFICE

The Contractor shall provide and maintain for the life of the contract an approved mobile office (mobile home style) meeting the following requirements as to space and facilities for the exclusive use of the government. The unit shall be ready for occupancy within 30 calendar days after notice to proceed. The unit shall provide a minimum of 500 square feet of floor area and shall include two private offices, each having approximately 100 square feet of floor area and a storage closet. The unit shall have two entrance doors. The remaining space is to be utilized as one large office, a toilet room and a storage area for coats, etc. The unit

shall be provided with a toilet room consisting of a stool and lavatory and an electric heater. The unit interior headroom shall be no less than a nominal 8'-0".

2.2.1 Location

The Contractor shall locate the portable mobile home type field office at or near the Contractor's field office site at a location approved by the Contracting Officer. Four parking spaces shall be reserved for Government vehicles at the Government trailer.

2.2.2 Construction.

The Government field office shall be similar in quality and age as the Contractor's field office, if provided. Exterior and interior finishes shall be free from color fade, chipping, or peeling. The unit shall be set level on blocking, be provided with plywood skirting, and be anchored to the ground for protection against wind damage. Exterior doors shall be provided with screens and outside hasps for use with padlocks. The unit shall be electrically wired for fluorescent ceiling lighting fixtures and weather proof porch lights at each entrance door, along with switches, duplex convenience outlets, and a master switch and fuse box as required. The entire unit shall be adequately insulated with fiberglass insulation and vapor barrier. Dead air crawl space shall be properly ventilated. Heating and air conditioning facilities shall be provided to maintain an ambient inside temperature of 68 degrees F. The unit shall be weather proof, and furnished with a forced air type heating plant, either gas or oil with hot and cold air ducts adequate to supply even heat throughout the unit. Air conditioning shall be furnished with capacity as recommended by the manufacturer for the trailer size. A central air conditioning system shall be provided.

2.2.3 Utilities.

The Contractor shall be responsible for service fees in connection with electrical power and heating (natural gas or oil service). The Contractor shall also be responsible for service fees in connection with the water supply, sanitary waste system, and telephone as indicated below. When available, city water and sewer system connections are preferred.

- a. Sanitary Facilities. In the absence of a city sewer connection, holding tanks shall be provided. The lavatory shall discharge into an outside underground holding tank with a capacity of not less than 400 gallons and a vented drain. The contractor shall provide year-round pumping of the holding tank as required. Subject to approval, a serviced chemical toilet may be used.
- b. Potable Water. In the absence of a city water connection, a potable water storage tank of not less than 300 gallons capacity shall be furnished with adequate supply filling connections and screened vent, and shall be stainless steel or plastic with a drain cock of not less than ½ inch size. Upon completion of the job, the Contractor shall remove the underground holding tank and backfill the excavation. The Contractor shall provide potable water for the storage tank if service connections are not provided.

c. Telephone. The Contractor shall be responsible for installation of telephone at the Government office. The telephone hook-up should be placed on a separate account from the Contractor's phone so that it can be transferred to the Government after installation. The Government will be responsible for the telephone service to the Government field office after installation.

2.2.4 Furnishings.

The following furnishings shall be provided for the Government office:

- a. A hot and cold drinking water dispenser.
- b. Bulletin board, 48" x 36" wood framed cork, mounted near entry/exit door.
- c. Dry erase board, 60" x 36" porcelain-on-steel with wood frame, wall mounted near and easily observable from the conference table.
- d. A work counter shall be supplied and mounted along a side wall, 2 feet wide/deep x 8 feet long at 40" above the finished floor. The top of the counter shall be 2 " (nominal) planking covered on top with hard tempered laminate or masonite of not less than 1/16" thickness and edged with a standard laminate trim. Alternatively, this work counter may be made of a pre-fabricated laminate counter top similar to a bathroom/kitchen counter top found at home improvement stores. Two shelves (each 12 inches wide/deep x 8 feet long and fabricated of a pre-finished laminate material), one above and one below the counter shall be supplied and installed. Install top shelf approximately 70" and bottom shelf approximately 24" above finished floor directly above and below the counter. Counter shall be structurally supported with brackets, etc. in order to prevent L/360 deflection (1/2 inch) of a 30 psf distributed and 200 pound point load at any point. Shelves shall be structurally supported with brackets, etc. in order to prevent a L/360 deflection of a 30 psf distributed load.
- e. Sign. The contractor shall securely attach to the unit exterior and adjacent to the main entrance door, as approved, a 24 inch by 36 inch sign with the Corps of Engineers castle insignia with wording as specified.
- f. Stoop. A stoop with 8 inch risers and handrails shall be provided at each entrance door.
- g. Windows. All windows shall be provided with sash and security screens along with shades, blinds or similar features that allow for the complete coverage of the windows on the inside.
- h. Lavatory. A 5 by 24 inch metal shelf and 15 by 20 inch wood or metal framed plate glass mirror shall be provided above the lavatory.

2.2.5 Furniture

Office furniture shall be coordinated with respect to style, color, and upholstery. The following furniture shall be provided:

- a. Two desks either wood or steel, double pedestal type, top approximately 60 inches by 34 inches, with lock.
- b. Two swivel armchairs with tilting seat and adjustable spring back.
- c. Two filing cabinets, four-drawer legal size, with lock.
- d. One drafting table stool, non-tilting, rotary type with back and

circular footrest.

- e. One drafting table, metal and/or wood, 36 inches by 48 inches.
- f. One conference table, 3/4 inch thick by 72 inches long by 36 inches wide with solid core construction top.
- g. Eight chairs for conference table, either wood or steel construction, with cushioned seat and backrest.
- h. One rack for hanging full size drawings.

2.2.6 Office Equipment

The following equipment shall be provided:

- a. Facsimile (fax) machine: one each, desk top plain paper type with modem bits per second speeds of 9600, 4800, and 2400, and capable of scanning or printing a letter size page (8.5 by 11 inch) with 10 millimetre margins at standard (203 x 98 dpi) and fine (203 x 196 dpi) resolutions. The Contractor shall also supply approved white facsimile paper for the entire project contract period.
- b. Copying machine: one each, with a halogen lamp light source and an indirect dual component dry tone process. For scanning, the machine shall have both a flat bed and an automatic sheet feeder accepting 11 x 17 (tabloid), 8.5 x 14 (legal), and 8.5 x 11 (US letter) paper. It shall be able to print the copy at 50% or 100% or 200% of the scale of the original. It shall have separate trays for 11 x 17, 8.5 x 14, and 8.5 x 11 paper. It shall also have the following capabilities: automatic feed, duplexing, collating, sorting, grouping, and stapling. It shall be completely set up and operational. For the entire contract project period, the Contractor shall supply approved white paper and furnish a complete maintenance service contract for the copying machine.
- c. Personal computers: two each, each having the following minimum capabilities and components, completely setup and operational.
 - (1) Processor: At least 900 MHz with 128 bit internal memory data paths and at least 256 KB level 2 (on chip) cache running at processor speed and at least 2 MB SDRAM level 3 cache.
 - (2) Memory: At least 512 MB RAM.
 - (3) Internal disk drive: At least one, with at least 12 GB capacity (usable, after formatting).
 - (4) Floppy disk drive: At least one 3.5 inch, high density.
 - (5) Optical disk drives: At least one CD (read at 24x or faster), and at least one CD-RW (read at 24x or faster, write CD-R at 8x or faster, write CD-RW at 4x or faster), and at least one DVD (read at 6x or faster; could be combined with one of the CD drives) and software for creating CDs.
 - (6) Internal modem: V.90.
 - (7) Video card: at least 16 MB SDRAM, supporting at least 1280 x 1024 pixels at 24 bits per pixel at greater than 74 Hz refresh frequency.
 - (8) Monitor: color, compatible with the video card and computer, capable of displaying at least 1280 x 1024 at greater than 74 Hz refresh frequency, with viewing area greater than 20 inches measured diagonally.
 - (9) Keyboard: compatible with computer, with over 100 keys.
 - (10) Mouse: two button with wheel.
 - (11) Operating system: Microsoft Windows 98 (or newer), loaded and

operational.

(12) Application software: Microsoft Office 2000 (or newer) and Adobe Acrobat (version 5 or newer), loaded and operational.

(13) Utility software: Norton AntiVirus for Windows (latest version), loaded and operational.

d. Networked laser printer: color Postscript, at least 600 dpi, capable of printing tabloid and letter size paper, at least 12 letter pages per minute nominal printing speed.

e. Telephones and telephone lines: Four telephone lines, each capable of supporting over 40,000 bits per second data transmission on a routine basis. Three identical telephones, each having at least 20 speed dial locations, speakerphone and intercom (within the trailer) capability, mute, hold, and redial functions, "line in use" indicator, and a volume control. Each telephone shall connect to all four phone lines, so that any phone can call on any line, and one line each shall be connected to the fax machine and each computer.

2.2.7 Maintenance.

The Contractor shall maintain the field office for the life of the contract. The Contractor shall be responsible for maintaining and paying for all costs associated with the following services:

a. Supplies. Toilet paper, paper toweling, paper and supplies for the FAX and copy machines shall be provided. Supply water for the drinking water dispenser. Supply water for the lavatory if a service connection is not provided for potable water.

b. Maintenance of office equipment. Include a maintenance service contract/agreement for operation of the Fax and Copy machines.

c. Janitorial Service. The Contractor shall provide daily janitorial service and provide all janitorial and sanitary supplies as well as trash removal service.

d. Snow removal. Maintenance of site access including snow removal service is the responsibility of the Contractor.

PART 3 EXECUTION

3.1 CLEANUP

Construction debris, waste materials, packaging material and the like shall be removed from the work site. Any dirt or mud which is tracked onto paved or surfaced roadways shall be cleaned away. Materials resulting from demolition activities which are salvageable shall be stored within the fenced area described above or at the supplemental storage area. Stored material not in trailers, whether new or salvaged, shall be neatly stacked when stored.

3.2 RESTORATION OF STORAGE AREA

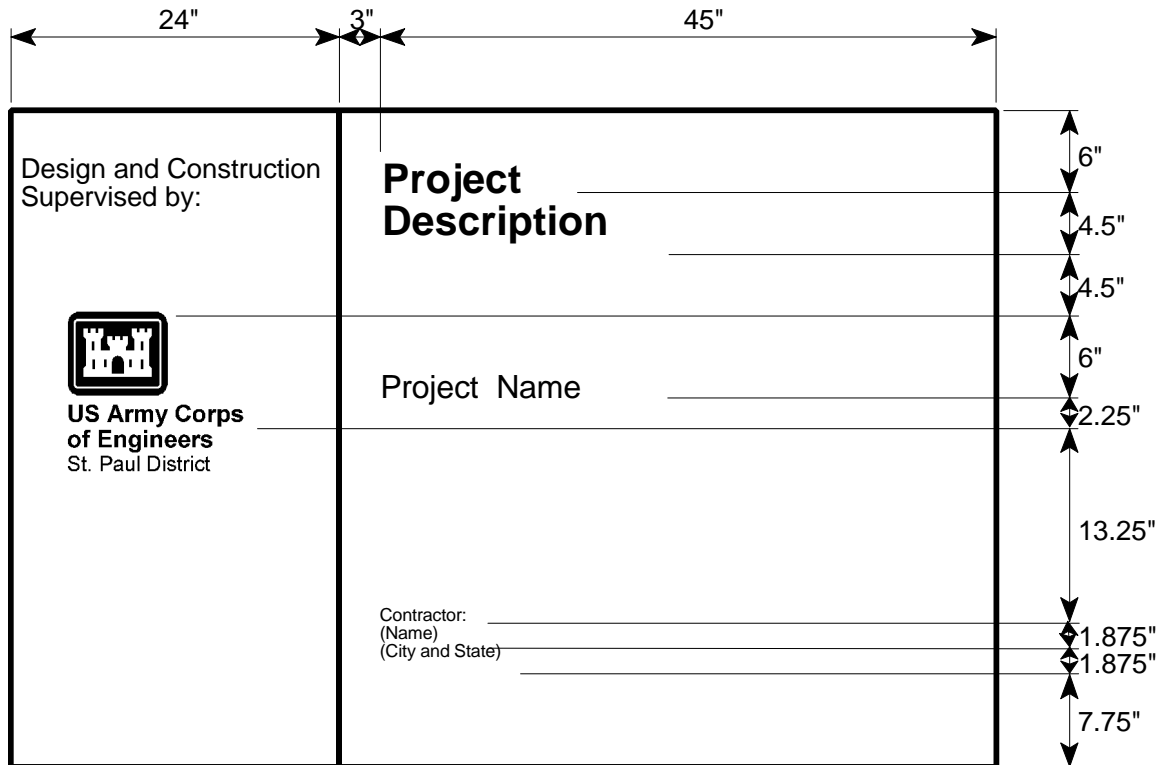
Upon completion of the project and after removal of trailers, materials, and equipment from within the fenced area, the fence shall be removed and will become the property of the Contractor. Areas used by the Contractor for the storage of equipment or material, or other use, shall be restored

to the original or better condition. Gravel used to traverse grassed areas shall be removed and the area restored to its original condition, including top soil and seeding as necessary.

-- End of Section --

PROJECT SIGN

The graphic format for this 4' x 6' sign panel follows the legend guidelines and layout as specified below. The large 4' x 4' section of the panel on the right is to be white with black legend. A 2' x 4' decal provided by the Corps shall be placed on the left side of the sign panel.



Project Description:

One to three line project title legend describes the work being done under this contract.

Color: Black; Typeface: 3" Helvetica Bold; Maximum line length: 42".

Project Name:

One to three line identification of project or facility.

Color: Black; Typeface: 1.5" Helvetica Bold; Maximum line length: 42".

Cross-align the first line of PROJECT NAME with the first line of the Corps Signature as shown.

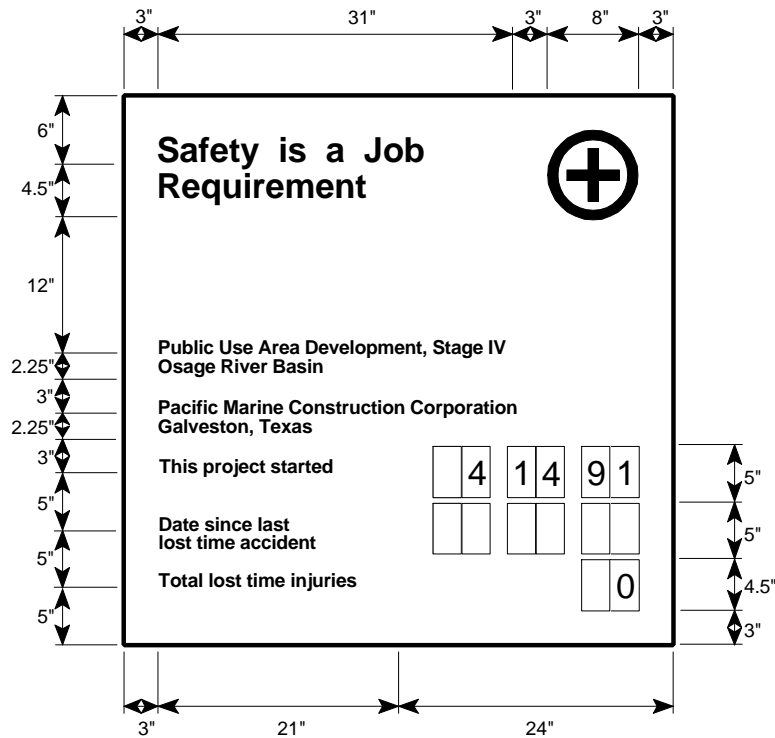
Contractor:

One to five line identification of prime contractors including: type (architect, general contractor, etc.), corporate or firm name, city, state.

Color: Black; Typeface: 1.25" Helvetica Bold; Maximum line length: 21".

All typography is flush left and ragged right, upper and lower case with initial capitals only as shown. Letter and word spacing to follow Corps Standards (EP 310-1-6a and 6b).

SAFETY SIGN



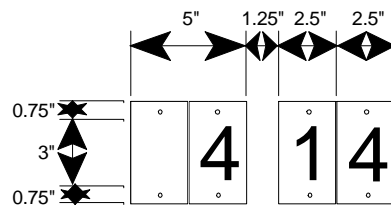
All typography is flush left and rag right, upper and lower case with initial capitals only as shown. Letter and word spacing to follow Corps Standards (EP 310-1-6a and 6b).

Legend Group 1: Standard two-line title "Safety is a Job Requirement" with (8" od.) Safety Green First Aid logo. Typeface: 3" Helvetica Bold; Color: Black.

Legend Group 2: One- to two-line project title legend describes the work being done under this contract and name of host project. Typeface: 1.5" Helvetica Regular; Color: Black; Maximum line length: 42".

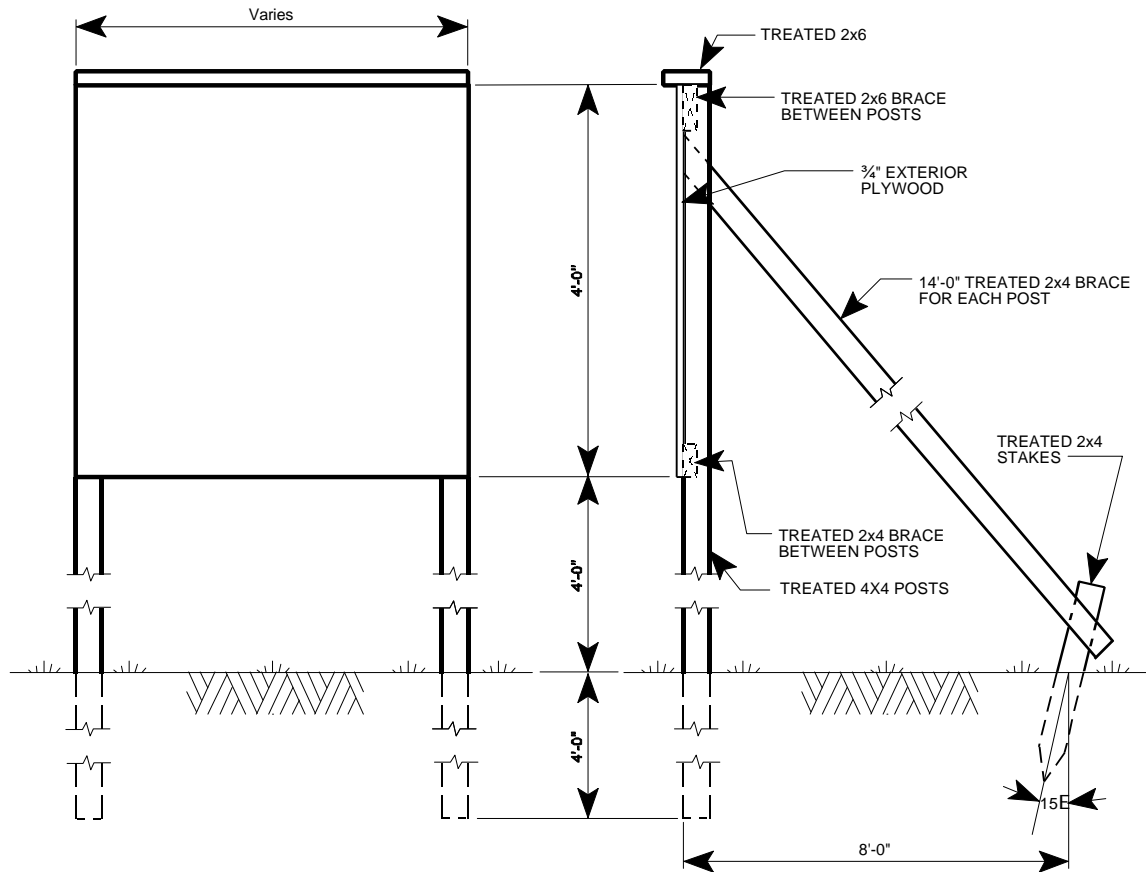
Legend Group 3: One- to two-line identification: name of prime contractor and city, state address. Typeface: 1.5" Helvetica Regular; Color: Black; Maximum line length: 42".

Legend Group 4: Standard safety record captions as shown. Typeface: 1.25" Helvetica Regular; Color: Black.



Replaceable numbers are to be mounted on white 0.060 aluminum plates and screw-mounted to background. Typeface: 3" Helvetica Regular; Color: Black; Plate size: 2.5" x 4.5".

SIGN ERECTION DETAILS



SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01567

MINNESOTA POLLUTANT DISCHARGE ELIMINATION SYSTEM

PART 1 GENERAL

- 1.1 GENERAL
 - 1.1.1 Definitions
 - 1.1.2 Contract Drawings
- 1.2 REFERENCES
- 1.3 SUBMITTALS
- 1.4 PERMIT COMPLIANCE AND ADDITIONAL REQUIREMENTS
 - 1.4.1 Schedule
 - 1.4.2 Temporary Erosion and Sediment Control Plan
 - 1.4.3 Application
 - 1.4.4 Permanent Erosion and Sediment Control Plan
- 1.5 MEASUREMENT AND PAYMENT

PART 2 PRODUCTS

- 2.1 SILT FENCE
- 2.2 STRAW BALES
- 2.3 OTHER PRODUCTS

PART 3 EXECUTION

- 3.1 IMPLEMENTATION
- 3.2 MAINTENANCE
- 3.3 RECORDS
- 3.4 ATTACHMENTS

-- End of Section Table of Contents --

SECTION 01567

MINNESOTA POLLUTANT DISCHARGE ELIMINATION SYSTEM

PART 1 GENERAL

1.1 GENERAL

This section covers best management practices to be implemented for prevention of storm water pollution as required by the National Pollutant Discharge Elimination System (NPDES). The Minnesota Pollution Control Agency is responsible for administering permits for NPDES in the state of Minnesota. The Government has determined that the project work included under this contract requires NPDES permitting. The requirements herein supplement those covered in SECTION 01355 ENVIRONMENTAL PROTECTION and SECTION 01356 STORM WATER POLLUTION PREVENTION MEASURES. The most stringent of the requirements specified in these Sections will apply.

1.1.1 Definitions

The following terms apply to this specification and the general permit, unless redefined in subsequent paragraphs.

- a. "Plan" means the Temporary Erosion and Sediment Control Plan.
- b. "EPA" means the United States Environmental Protection Agency.
- c. "MPCA" means the Minnesota Pollution Control Agency.
- d. "NPDES" means the National Pollutant Discharge Elimination System.
- e. "MPDES" means the Minnesota Pollutant Discharge Elimination System.
- f. "Owner" as referred to in the general permit shall mean the Federal Government.
- g. "Permittees" as referred to in the general permit shall mean the Federal Government and Contractor.
- h. "General Permit" means the general permit authorization to discharge storm water associated with a construction activity under the National Pollutant Discharge Elimination System/State Disposal System Permit Program.
- j. "BMP" means Best Management Practices.

1.1.2 Contract Drawings

The following features are shown on or can be determined from the contract drawings:

- a. The drainage patterns and approximate slopes anticipated after the major grading activities.
- b. Areas of soil disturbance.
- c. The location(s) where stabilization practices are expected to occur.
- d. Typical details showing suggested Best Management Practices (BMPs) for erosion and sediment control.
- e. Waters of the State.

f. Final site stabilization.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA/832/R-92/005	Storm Water Management for Construction Activities - Developing Pollution Prevention Plans and Best Management Practices
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MINNESOTA DEPARTMENT OF TRANSPORTATION

MNDOT 3885	Standard Specifications for Construction (1995 Edition), Erosion Control Blankets
MNDOT 3886	Standard Specifications for Construction (1995 Edition), Silt Fence
MNDOT 3887	Standard Specifications for Construction (1995 Edition), Flotation Silt Curtain

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Application; G,PM

A copy of the Application for General Storm Water Permit for Construction Activity (MPCA Form PQ00641) shall be submitted to the Contracting Officer at the same time it is transmitted to the state.

SD-02 Shop Drawings

Temporary Erosion And Sediment Control Plan;

A specific Temporary Erosion and Sediment Control Plan shall be submitted in accordance with PARAGRAPH: PERMIT COMPLIANCE AND ADDITIONAL REQUIREMENTS.

SD-11 Closeout Submittals

Notice of Termination;

A copy of the notice of termination shall be submitted to the Contracting Officer at the same time it is transmitted to the state.

1.4 PERMIT COMPLIANCE AND ADDITIONAL REQUIREMENTS

The Contractor shall comply with the requirements of General Permit No. MNR100000. The following define additional requirements and clarify which requirements of the General Permit are to be performed by either the Contractor, the Government, or both.

1.4.1 Schedule

No contract project construction activities which require an NPDES permit may commence until the MPDES permit is valid.

1.4.2 Temporary Erosion and Sediment Control Plan

The contract drawings show typical details of suggested best management practices (BMPs) for erosion and sediment control taken from EPA/832/R-92/005. The BMPs, together with applicable portions of the site drawings and specifications form an initial plan for temporary erosion and sediment control. The Contractor shall finalize and implement the plan. The finalized plan, together with documentation, shall be in accordance with the general permit. The plan shall be maintained at the site and made available to federal, state, and local officials as requested. The Contractor shall determine the specific BMPs for erosion and sediment control (including the types, locations, and installation scheduling of erosion and sediment controls). These BMPs and corresponding material specifications and shop drawings shall be included in the Plan.

1.4.3 Application

The Application for General Storm Water Permit for Construction Activity must be signed by the Government and the Contractor. A blank copy of the application form is included at the end of this section. Immediately after contract award, the Contractor shall complete parts I, II and V of the application form, obtain signature by the Government, and submit the form to the state. The application shall be post marked at least 48 hours in advance of any ground breaking activities. The Contractor is responsible for payment of the application fee.

1.4.4 Permanent Erosion and Sediment Control Plan

The Government has developed the Permanent Erosion and Sediment Control Plan and will maintain availability of the plan to federal, state, and local officials as required in the General Permit. This plan is included as drawing Z2-22 and is attached to the end of the plan set.

1.5 MEASUREMENT AND PAYMENT

The contractor shall be responsible for the work of this section, without any direct compensation being made other than the payment received for

contract items.

PART 2 PRODUCTS

2.1 SILT FENCE

Silt fence shall be manufactured and installed as shown on drawings. On level sites with minimal potential for sediment loading, the wire fabric may be omitted. Fabric for silt fence shall conform to requirements given in MNDOT 3886.

2.2 STRAW BALES

Straw shall be baled from oats, wheat, rye, barley, rice, or other coarse fiber vegetation that will percolate water. Hay baled from grass, alfalfa and clover is not acceptable.

2.3 OTHER PRODUCTS

Any products proposed for use that are not included on drawing Z2-22 shall be described fully, with catalog cuts and manufacturer's instructions for use, in the temporary erosion and sediment control plan. Other products, if proposed in the final plan, shall meet the following requirements:

Erosion control blankets shall meet MNDOT 3885

Floataion Silt Curtain shall meet MNDOT 3887

PART 3 EXECUTION

As between the Government and the Contractor, the Contractor shall be responsible for fulfilling the obligations of the general permit for the following sections:

Part I-C: Records

Part I-D: Erosion and Sediment Control During Construction

Part I-E: Inspection and Maintenance

Appendix A: Temporary Erosion and Sediment Control Plan

3.1 IMPLEMENTATION

The Contractor shall install the sediment and erosion control system in accordance with the plan submitted to the Contracting Officer. The BMPs shall be modified if inspection indicates distress to the system or reveals unforeseen circumstances, or if directed by the Contracting Officer. Any updates to the plan shall be recorded. Permanent stabilization shall be initiated as soon as practicable in any portion of the site where construction activities are complete.

3.2 MAINTENANCE

The Contractor shall be responsible for implementing and managing the erosion and sediment control BMPs before and during the construction

activities; and ensure that the Plan will be implemented and stay in effect until the work has been completed, the entire work site has undergone final stabilization, and a Notice of Termination has been submitted to the Contracting Officer and the state permitting authority.

3.3 RECORDS

The contractor shall record on CQC reports: (1) dates when major stripping and grading activities occur, (2) dates when construction activities temporarily or permanently cease on a portion of the site, (3) when permanent stabilization practices are initiated, and (4) activities associated with inspection and maintenance.

3.4 ATTACHMENTS

Application for General Storm Water Permit for Construction
Activity (MDNR Form PQ00641 with instructions) 4 Pages

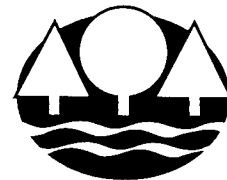
MPDES [General] Permit No. MN R100000 21 Pages

-- End of Section --



Application for General Storm Water Permit for Construction Activity (#MNR100000)

Minnesota Pollution Control Agency
520 Lafayette Road North; St. Paul, MN 55155-4194



I. Construction Site Information

1. Name of project: _____
2. Brief description of where the construction activity occurs (please include address, if available):

3. Indicate ALL cities, counties, and townships where the construction activity will take place:

4. Name of waterbody(s) that will receive storm water from the construction site:

5. Project start date: _____ Project completion date: _____ Area to be disturbed by project: _____
(in acres)

II. Prerequisites for Applying for a Permit

For the following questions, please refer to the **NPDES General Storm Water Permit** (MNR100000).

A "No" answer for any question will result in this form being returned to the owner with no permit issued to authorize the construction activity. This application will need to be completed and returned to the MPCA before a permit to authorize the construction activity may be issued.

6. Has a **Temporary Erosion and Sediment Control Plan** been developed for this project in accordance with Appendix A and incorporated into this project's final plans and specifications? Yes ☐ No ☐
7. Has a **Permanent Erosion and Sediment Control Plan** been developed for this project in accordance with Appendix B and incorporated into this project's final plans and specifications? Yes ☐ No ☐
8. Has the Application Fee been enclosed? Yes ☐ No ☐

III. Owner Information

Name _____ Telephone _____

Address _____

City _____ State _____ Zip Code _____

Contact Person _____ Telephone _____

IV. Owner Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person, or persons, who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete (Minnesota Rules part 7001.0070).

I also certify under penalty of law that I have read, understood, and accepted all terms and conditions of the National Pollutant Discharge Elimination System (NPDES) General Storm Water permit (MNR100000) that authorizes storm water discharges associated with the construction site identified on the front side of this form.

I understand that as a permittee, I am legally accountable under the Clean Water Act, to ensure compliance with the terms and conditions of the NPDES General Storm Water Permit (MNR100000).

I also understand that MPCA enforcement actions (pursuant to Minnesota Statutes sections 115.07, 116.072, and 609.71 and Section 309 of the Clean Water Act) may be taken against my company if the terms and conditions of the NPDES General Storm Water Permit (MNR100000) are not met.

Printed Name

Title (Manager, CEO, etc.)

Authorized Signature

Date

V. General Contractor Certification

I certify under penalty of law that I have read, understood, and accepted all terms and conditions of the National Pollutant Discharge Elimination System (NPDES) General Storm Water permit (MNR100000) that authorizes storm water discharges associated with the construction site identified on this form.

I understand that for Parts I.B. through I.E, Appendix C, and Appendix D of the General Storm Water Permit (MNR100000) I am becoming a co-permittee with the owner of the facility for which I have been contracted to perform professional construction services. As a co-permittee I understand that my company is legally accountable, under the Clean Water Act, to ensure compliance with the terms and conditions of the General Storm Water Permit (MNR100000).

I also understand that MPCA enforcement actions (pursuant to Minnesota Statutes sections 115.07, 116.072, and 609.71 and Section 309 of the Clean Water Act) may be taken against my company if the terms and conditions of the NPDES General Storm Water Permit (MNR100000) for which I am a co-permittee, are not met.

Company or Firm

Telephone

Printed Name

Title (Manager, CEO, etc.)

Authorized Signature

Date

Address

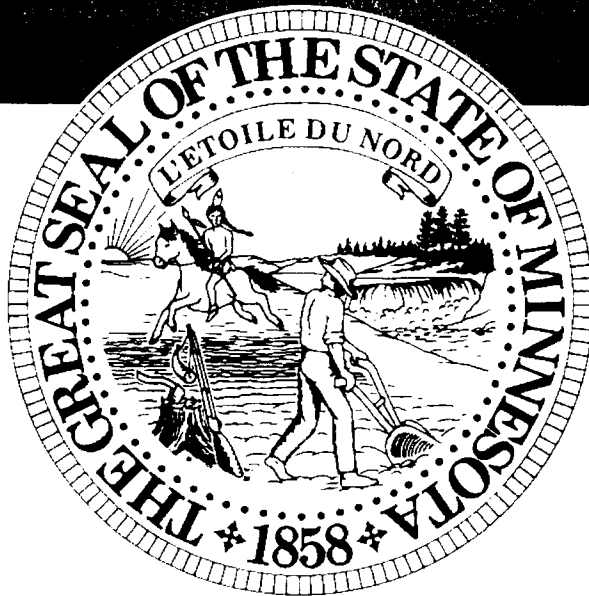
City

State

Zip Code

Contact Person

Telephone



Application Instructions for General Storm Water Permit

CONSTRUCTION ACTIVITY

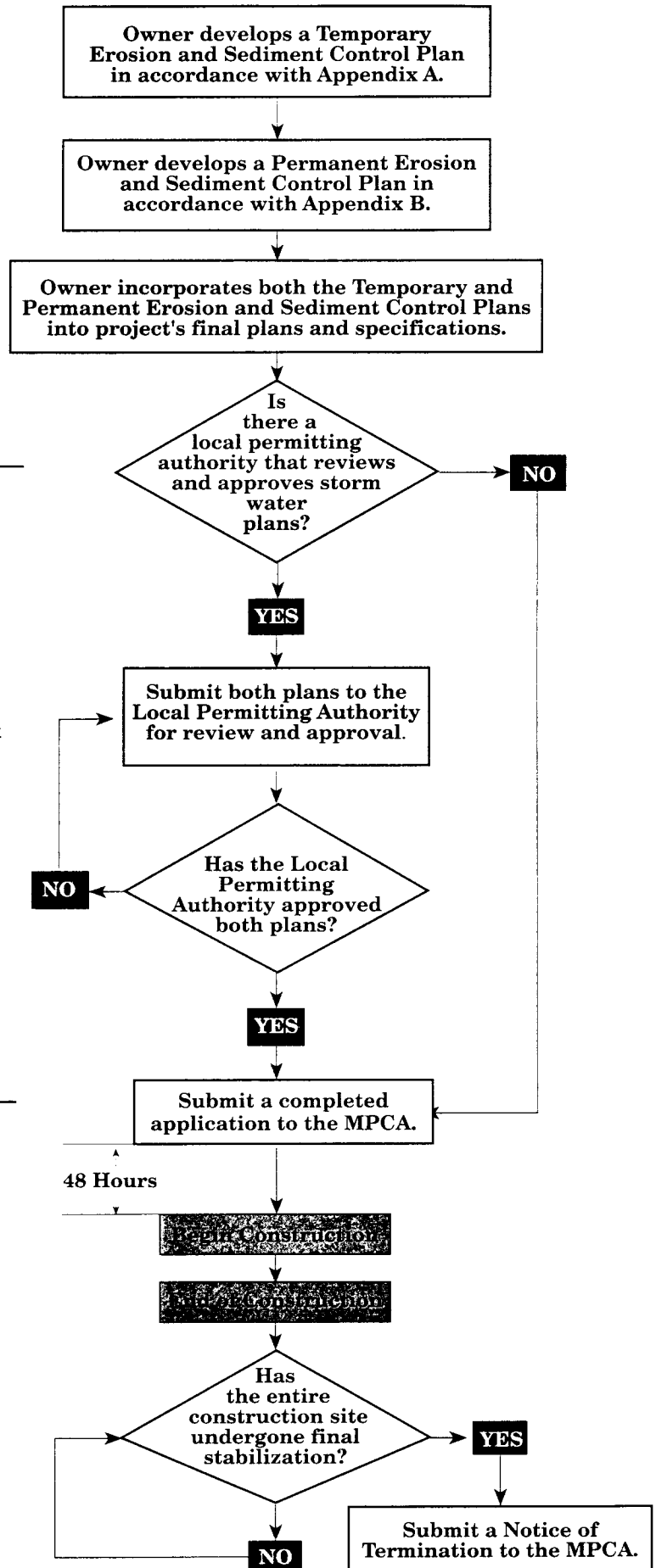


Minnesota Pollution Control Agency

520 Lafayette Road North
St. Paul, MN 55155-4194

Application Process for Coverage Under Storm Water Permit for Construction Activity

Applicants still need to seek approval through required permitting process at the local, state, and federal levels.



For additional information call:

(612) 296-7219 or
1-800-657-3804

People with speech or hearing impairments may call (612) 282-5332 or 1-800-627-3529

**Minnesota Pollution Control Agency****GENERAL PERMIT****AUTHORIZATION TO DISCHARGE****STORM WATER ASSOCIATED WITH A CONSTRUCTION****ACTIVITY UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION****SYSTEM/STATE DISPOSAL SYSTEM PERMIT PROGRAM****ISSUANCE DATE: September 4, 1998****EXPIRATION DATE: September 4, 2003**

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et seq., hereinafter, the "Act"); 40 CFR 122, 123, and 124, as amended, et seq.; Minnesota Statutes Chapters 115 and 116, as amended, and Minnesota Rules Chapter 7001:


This permit establishes conditions for discharging storm water to waters of the state from construction activities which disturb five or more acres of total land area.

This permit DOES NOT authorize:

- 1) Discharges or releases that are not storm water as defined on Page 18 (see "Prohibitions" on Page 14 of this permit).
- 2) The placement of fill into waters of the state.

Unless notified by the Agency to the contrary, applicants who submit a complete application form in accordance with the requirements of this permit are authorized to discharge storm water from construction sites under the terms and conditions of this permit 48 hours after the date the application is postmarked.

Coverage under this permit will remain in effect until construction is complete, the site has undergone final stabilization, all maintenance activities required in Part I.E. have been completed, and the Permittee has submitted a Notice of Termination, regardless of the above expiration date.

Signature: 

John N. Holck, Manager

South District

Operations & Planning/Major Facilities

for

Peder A. Larson

Commissioner

Minnesota Pollution Control Agency

If you have questions on this permit, including the specific permit requirements, permit reporting or permit compliance status, please contact:

**Minnesota Pollution Control Agency
Metro District, Storm Water Permit Program
520 Lafayette Road North
St. Paul, MN 55155-4194
Telephone (651) 296-3890
Fax (651) 297-8701**

Table of Contents

	Page
I. REQUIREMENTS OF THIS PERMIT	3
A) Prerequisites for Submitting a Permit Application.	3
B) Application for Coverage	3
C) Records to be Kept On Site	4
D) Erosion and Sediment Control During Construction	5
1) Erosion Control	5
2) Sediment Control	6
E) Inspections and Maintenance.	7
F) Duration of Permit Coverage.	8
G) Appendices Incorporated by Reference	8
 II. APPENDICES	
 APPENDIX A - TEMPORARY EROSION AND SEDIMENT CONTROL PLAN	
A) Goal	9
B) Assigning Responsibilities	9
C) Plan Contents.	9
D) Final Plans and Specifications	10
E) Plan Retention	10
F) Changes to the Temporary Erosion and Sediment Control Plan	10
 APPENDIX B - PERMANENT EROSION AND SEDIMENT CONTROL PLAN	
A) Goal	11
B) Assigning Responsibilities	11
C) Plan Contents.	11
D) Final Plans and Specifications	13
E) Plan Retention	13
F) Changes to the Permanent Erosion and Sediment Control Plan	13
 APPENDIX C - PROVISIONS	
A) Applicability Criteria	14
B) MPCA Address	14
C) Response	14
D) Authorized Discharges.	14
E) Prohibitions	14
F) Definitions	15
 APPENDIX D - RESPONSIBILITIES	
A) Transfer Ownership of Control	19
B) Permit Modification	19
C) Right of Entry	19
D) Civil and Criminal Liability	20
E) Oil and Hazardous Substance Liability	20
F) Liability Exemption	20
G) Minnesota Laws	20
H) Property Rights	20
I) Severability	20
J) NPDES/SDS Rules	21
K) Other Statutes, Rules, and Ordinances.	21
L) More Stringent Rules	21
M) Agency Obligation	21

I. REQUIREMENTS OF THIS PERMIT

A. PREREQUISITES FOR SUBMITTING A PERMIT APPLICATION

Failure to complete the following prerequisites prior to submitting the **application** will result in the **application** being returned, and the construction project NOT authorized by this **permit**.

1. The **owner** must develop a Temporary **Erosion and Sediment Control** Plan in accordance with "Appendix A." The plan requirements must be incorporated into the project's **final plans and specifications** and implemented as part of the project.
2. The **owner** must develop a Permanent **Erosion and Sediment Control** Plan in accordance with "Appendix B." The plan requirements must be incorporated into the project's **final plans and specifications** and implemented as part of the project.

The above plans are NOT to be submitted to the Agency but are to be retained by the owner in accordance with Appendices A and B; "Plan Retention."

B. APPLICATION FOR COVERAGE

1. The **owner** and **general contractor** are responsible for submitting a completed **application** form (or a photocopy thereof) to the Minnesota Pollution Control Agency (MPCA) for each project which disturbs five (5) or more acres of land.
2. The **owner** who signs the **application** is responsible for compliance with all terms and conditions of this **permit**. The **general contractor** who signs the **application** is a Co-Permittee for Parts I.B. through I.E., Appendix C, and Appendix D of this **permit**. and is responsible for compliance with those portions of this **permit**.
3. This permit will become effective 48 hours after the postmarked date of the completed **application** form containing "Yes" responses to questions 6, 7, and 8. A "No" response to question 6, 7, or 8 will result in the application being returned to the owner, and no permit will be issued to authorize the construction. No construction which requires an NPDES permit may commence unless authorized by an NPDES permit.
4. Permittees will receive a "Notice of Storm Water Permit Coverage" card acknowledging permit coverage within 30 days of the postmarked date of the completed **application**. (See I.D.3. for posting requirements.) A photocopy of this card must be provided by the **owner** to the **local permitting authority**, where applicable, within 14 days of receipt.

C. RECORDS

1. The project's **final plans and specifications** which incorporate the requirements of the Temporary Erosion and Sediment Control Plan and Permanent Erosion and Sediment Control Plan must be:
 - a. available at the construction site in either the field office, or, inspector's vehicle, or contractor's vehicle, and,
 - b. available to federal, state, and local officials (in accordance with Appendix D, Subpart C) for inspection for the duration of this permit.
2. The following plans/records must be made available to federal, state and local officials within 24 hours of request (in accordance with Appendix D, Subpart C.) for the duration of the permit:
 - a. Temporary Erosion and Sediment Control Plan developed in accordance with Part I.A.1. (if a separate document from the project's **final plans and specifications**).
 - b. Permanent Erosion and Sediment Control Plan developed in accordance with Part I.A.2.
 - c. Records of all inspections (see Part I.E.). Records shall include:
 - 1) Date and time of inspections,
 - 2) Findings of inspections,
 - 3) Corrective actions taken (including dates and times)
 - 4) Documentation of changes to the Temporary Erosion and Sediment Control Plan made during construction.
 - d. Date of all rainfall events.
3. The "Notice of Storm Water Permit Coverage" card shall be posted at any of the following locations:
 - a. construction site entrance and visible from the nearest public roadway
 - b. visible from the nearest public roadway, where no construction site entrance exists
 - c. field office (if applicable)
 - d. for linear utility and non-contiguous municipal projects, at the office responsible for project administration.

D. EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION

1. Erosion Control

- a. The **Permittee(s)** shall use, where possible, horizontal slope grading, construction phasing, and other construction practices that minimize **erosion**.
- b. Unless precluded by snow cover, all **exposed soil areas*** with a continuous positive slope within 100 lineal feet from a water of the state, or from a curb, gutter, storm sewer inlet, temporary or permanent drainage ditch or other **storm water** conveyance system, which is connected to a water of the state, shall have **temporary protection or permanent cover** for the **exposed soil areas** within the following time frames:

<u>Type of Slope</u>	Temporary protection or permanent cover where the area has not been, or will not be, worked by the contractor for:
Steeper than 3:1	7 days
10:1 to 3:1	14 days
Flatter than 10:1	21 days

*For the purposes of this provision, **exposed soil areas** do not include stockpiles or surcharge areas of sand, gravel, aggregate, concrete or bituminous.

- c. The bottom of any temporary or permanent drainage ditch constructed to drain water from a construction site must be stabilized within 100 lineal feet from a water of the state. Stabilization must be initiated within 24 hours of connecting the drainage ditch to **a water of the state**, existing gutter, storm sewer inlet, drainage ditch, or other **storm water** conveyance system which discharges to **waters of the state** and completed within five calendar days.
- d. Prior to connecting any pipe to a **water of the state** or drainage ditch, the pipe's outlet must be provided with temporary or permanent **energy dissipation** to prevent erosion.

2. Sediment Control

- a. **Sediment control best management practices (BMPs)**, which prevent **sediment** from entering a **water of the state**, gutter, storm sewer inlet, ditch or other storm water conveyance system, shall be established on all down-gradient perimeters before any up-gradient land disturbing activities begin, and shall remain in place until final stabilization has been established.
- b. The Permittee shall minimize vehicle tracking of **sediment** or **soil** off site at locations where vehicles exit the construction site onto **paved surfaces**.
- c. Where 10 or more contiguous acres of **exposed soil** are contributing to a discernible point of **discharge**, temporary sedimentation basins* must be provided prior to the runoff leaving the construction site or entering **waters of the state**.

These sedimentation basins shall comply with the following:

- 1) Basins shall provide 1800 ft³ per acre drained of hydraulic storage below the outlet pipe. For roadways, the use of adjacent drainage ditches with riser pipes to accomplish this is acceptable.
- 2) Basin outlets shall be designed to prevent short circuiting and the **discharge** of floating debris. The outlet should consist of a perforated riser pipe wrapped with filter fabric and covered with crushed gravel. The perforated riser pipe should be designed to allow complete basin drawdown.

*While recommended, this provision will not be required for:

- 1) work on existing roadways where the 10 acre disturbed common drainage area is served by an existing storm sewer which is daylighted off the road's right-of-way,
or,
- 2) proximity to bedrock or vertical relief precludes it,
or,
- 3) final stabilization will be established within 30 days of the initiation of construction activity.

E. INSPECTIONS AND MAINTENANCE

1. Except where work has been suspended due to frozen ground conditions, the **Permittee(s)** shall inspect the construction site once every seven (7) days and within 24 hours after every rain event, which results in runoff leaving the construction site or entering **waters of the state**. The **Permittee** shall investigate and comply with the following inspection and maintenance requirements:

- a. Inspection Requirement: All **erosion** and perimeter **sediment control BMPs** to ensure integrity and effectiveness.

Maintenance Requirement: All nonfunctional perimeter **sediment control BMPs** shall be repaired when the sediment reaches 1/3 of the height, or replaced, or supplemented with functional **BMPs** within 24 hours of discovery. All nonfunctional **erosion control BMPs** shall be repaired, replaced, or supplemented with functional **BMPs** as soon as field conditions allow access.

- b. Inspection Requirement: All temporary sedimentation basins to ensure effectiveness.

Maintenance Requirement: When the depth of sediment collected in the basin reaches 1/2 the height of the riser, or 1/2 the storage volume, the basin shall be drained and the sediment removed. Drainage and removal shall be completed within 72 hours of discovery, or as soon as field conditions allow access.

- c. Inspection Requirement: Drainage ditches and other **waters of the state** for evidence of **sediment** leaving the site.

Maintenance Requirement: Unless the project has received approval or certification for depositing fill into waters of the state, the **Permittee** shall remove all deltas and **sediment** deposited in drainage ways, catch basins, or **waters of the state**, and restabilize the areas where **sediment** removal results in **exposed soil**. The removal and stabilization shall take place within seven (7) days of discovery unless precluded by legal, regulatory, or physical access restraints. If precluded, removal and stabilization must take place within seven calendar days of obtaining access. The **Permittee** is responsible for contacting all local, regional, state and federal authorities prior to working in waters of the state, and receiving any applicable permits.

- d. Inspection Requirement: Construction site vehicle exit locations for evidence of off-site **sediment** tracking onto paved **surfaces**.

Maintenance Requirement: Tracked **sediment** shall be removed from paved **surfaces**, which do not drain back into the construction site, within 24 hours of discovery.

2. Where parts of the construction site have undergone **final stabilization**, but work remains on other parts of the site, inspections of the stabilized areas may be reduced to once per month.
3. Where work has been suspended due to frozen ground conditions, the inspections and maintenance required in Part I.E.1. above shall take place as soon as weather conditions warrant or prior to resuming construction.
4. Unless required to remain in place by the **owner** or **local permitting authority**, all temporary synthetic, structural, and nonbiodegradable **erosion** and **sediment control BMPs** shall be removed after the site has undergone **final stabilization**.
5. After the entire project has undergone **final stabilization**, all temporary sedimentation basins to be used as permanent water quality management basins must be cleaned out by the **Permittee** to provide the sediment storage capacity required in Part I.D.2.c.2. **Permittees** are responsible for the maintenance of water quality management **BMPs** until construction is complete, the site has undergone **final stabilization**, and a **Notice of Termination** has been submitted to the **Agency**.

F. DURATION OF PERMIT COVERAGE

The **owner** and **general contractor** are responsible for complying with their respective portions of this permit until construction is complete, all maintenance activities required in Part I.E. are complete, the site has undergone **final stabilization** and a **Notice of Termination** is submitted to the **Agency**.

G. APPENDICES INCORPORATED BY REFERENCE

Appendices A, B, C, and D are incorporated into this permit by reference and are made both integral and enforceable parts of this permit.

APPENDIX A

TEMPORARY EROSION AND SEDIMENT CONTROL PLAN

(Completed prior to submittal of an application)

- A. GOAL: The goal of the Temporary Erosion and Sediment Control Plan is to prevent **sediment** from entering **waters of the state** during construction. The **owner** shall incorporate **Best Management Practices (BMPs)** into the project's **final plans and specifications**, which are designed to meet this goal and comply with Parts I.D. and I.E. of this **permit**. While the general requirements are identified in Parts I.D. and I.E. of this **permit**, it is the **owner's** responsibility to select the appropriate **BMPs** which satisfy these requirements.

B. ASSIGNING RESPONSIBILITY

When developing bidding documents or other contracts, the **owner** must identify who will implement and manage the **erosion and sediment control BMPs** before and during construction; and ensure that the plan will be implemented and stay in effect until the construction project is complete, the entire site has undergone **final stabilization**, and a **Notice of Termination** has been submitted to the Agency. In addition, the **final plans and specifications** must clearly identify who will be responsible for the maintenance requirements identified in Part I.E. of this permit.

C. PLAN CONTENTS

The Temporary **Erosion and Sediment Control Plan**, if developed as a document separate from the project's **final plans and specifications**, must be prepared for the proposed project. The plan must contain appropriate **BMPs** which comply with Parts I.D. and I.E. of this permit and contain **standard plates** and/or specifications of these **BMPs**.

1. **Standard plates** and/or specifications must be provided for all **BMPs**, selected by the designer to be used on the project, and at a minimum, must include the following:
 - a. perimeter sediment control
 - b. placement and type of **temporary cover**
2. Where applicable, **standard plates** and/or specifications must also be provided for the following:
 - a. horizontal slope grading
 - b. proposed stabilized vehicle entrances
 - c. temporary sedimentation basins
 - d. storm sewer pipe outlet energy dissipation
 - e. storm sewer inlet control
 - f. **erosion and sediment control** requirements for stockpile areas

D.

The above **standard plates** and/or specifications are to be incorporated into the project's **final plans and specifications**. In addition, the **final plans and specifications** shall clearly denote:

1. Location and type or the procedures to establish the location and type of all **erosion and sediment control BMPs**.
2. Existing and final grades, including dividing lines and direction of flow for all **storm water** runoff drainage areas located within the project limits.
3. Locations of areas not to be disturbed or areas where construction will be staged to minimize duration of **exposed soil areas**.
4. All **waters of the state**, including existing wetlands identified on the National Wetlands Inventory Map, within one-half mile from the exposed construction area which will receive direct storm water runoff from the construction site during construction.

Where waters of the state, including wetlands, which will receive the direct runoff will not fit on a plan sheet, they shall be identified with an arrow, indicating both direction and distance.

5. Timing for installation of all erosion and sediment control BMPs required in Part J.D.

E.

The owner shall keep a copy of the Temporary Erosion and Sediment Control Plan and all changes to it for three years after completion of the construction project.

F.

Changes in the plan made during construction to accommodate phased construction, sequenced work, timing issues, or changed site conditions are allowable provided Parts I.D. through I.E. are complied with.

PERMANENT EROSION AND SEDIMENT CONTROL PLAN

A. GOAL: The goal of the Permanent Erosion and Sediment Control Plan is to protect Minnesota's water resources from pollutants generated from a project's ultimate development's impervious surfaces, change in land use, or changed ground cover.

When developing bidding documents or other contracts, the owner must identify who will maintain the water quality management BMPs until construction is complete, all maintenance activities required in Part I.E. are complete, the site has undergone final stabilization, and a Notice of Termination has been submitted to the Agency.

The Permanent Erosion and Sediment Control Plan must be prepared for the proposed project, and may be developed as a separate document from the **final plans and specifications**. The plan must contain appropriate **BMPs** which satisfy the above goal, and contain **standard plates** and/or specifications of these **BMPs**. These **standard plates** and specifications must be incorporated into the project's **final plans and specifications**. At a minimum, the plan must contain:

- Total project area;
- Total **impervious surface** area of project;
- Total pervious area of project;
- Total estimated **impervious surface** area of ultimate development;
- Total estimated pervious area of ultimate development;

- a. **Sediment Control**

Where a project's ultimate development replaces surface vegetation with one or more acres of cumulative impervious surface and all runoff has not been accounted for in a local unit of government's existing storm water management plan or practice, the runoff shall be discharged to a wet sedimentation basin* prior to entering waters of the state.

- Except as provided in 2) below ("Reconstruction or Work on Existing Roadways"), the wet sedimentation basin shall be based on the project's ultimate development and comply with the following requirements:

- ## 2) Reconstruction or Work on Existing Roadways

b. Permanent Erosion Control

- ### c. Treatment

All **boldfaced** terms are defined in "Definitions", Pages 15 through 18.

D. FINAL PLANS AND SPECIFICATIONS

The above standard plates and/or specifications are to be incorporated into the project's final plans and specifications. In addition, the final plans and specifications shall clearly denote:

1. Location and type of all permanent erosion and sediment control BMPs (Appendix B.C.2a., 2b. and 2c.).
2. The plan sheets must clearly identify all **waters of the state**, including wetlands identified on the National Wetlands Inventory Map within and one-half mile from the construction area which will receive direct **storm water** runoff from the construction site after construction is complete.

Where the **waters of the state** which will receive the direct runoff and will not fit on the plan sheet, the resource shall be identified with an arrow, indicating both direction and distance.

3. Methods to be used for final stabilization of all exposed soil areas. For linear utility and roadway projects, final stabilization is not required on agricultural land which will be tilled within one year of project completion.

E. PLAN RETENTION

The owner shall keep a copy of the Permanent Erosion and Sediment Control Plan and all changes to it for three years after completion of the construction project.

F. CHANGES TO THE PERMANENT EROSION AND SEDIMENT CONTROL PLAN

Changes in the plan made during construction to accommodate changed site conditions are allowable provided all of Appendix B. is complied with.

APPENDIX C

PROVISIONS

A. APPLICABILITY CRITERIA

1. This permit covers storm water discharges associated with a construction activity which disturb **five (5) or more acres of land** in all areas of the state of Minnesota, except for agricultural/silvicultural activities.
2. This is a National Pollutant Discharge Elimination System/State Disposal System general permit.
3. If the Commissioner determines that storm water discharges associated with a construction activity, or other activities, are contributing to a violation of a water quality standard or would be more appropriately regulated by an individual permit, the Commissioner may require a Permittee to be covered by an individual storm water discharge permit. The Commissioner may require a Permittee to develop and implement specific best management practices. Upon issuance of an individual permit, this general permit would no longer apply.
4. A permit applicant, or Permittee, may request an individual permit.

B. MPCA ADDRESS

Submit all forms, correspondence, reports, etc. to the following address:

Minnesota Pollution Control Agency
Water Quality Division
Attn: Construction Activity Storm Water Program
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

C. RESPONSE

The Permittee shall respond to Agency requests for submittal of temporary and permanent erosion and sediment control plans and water quality management plans, certificates, reports, records, or other information required by this permit. Upon request, the Permittee shall also provide a copy of this information to the local permitting authority and municipal storm sewer operator.

D. AUTHORIZED DISCHARGES

All discharges of storm water associated with a construction activity shall be composed entirely of storm water.

E. PROHIBITIONS

Discharges of any material other than storm water, such as vehicle and equipment maintenance spills; wash water; oil and other hazardous substances are prohibited by this permit.

F. DEFINITIONS

1. "Act" means the Clean Water Act (formerly the Federal Water Pollution Control Act), United States Code, Title 33, Sections 1251 et seq., as amended.
2. "Agency" means the Minnesota Pollution Control Agency (MPCA).
3. "Application" means a completed application for activities regulated by this permit. Application forms are available from the Agency.
4. "Best Management Practices (BMPs)" means erosion and sediment control and water quality management practices that are the most effective and practicable means of controlling, preventing, and minimizing degradation of surface water, including construction-phasing, minimizing the length of time soil areas are exposed, prohibitions, and other management practices published by state or designated areawide planning agencies.

Examples of BMPs can be found in Protecting Water Quality in Urban Areas, Minnesota Pollution Control Agency 1989, and Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices, U.S. Environmental Protection Agency 1992 as a reference for BMPs, and Erosion Control Design Manual, Minnesota Department of Transportation, et al, 1993.

5. "Construction Activity" means a disturbance to the land that results in a change in the topography, existing soil cover (both vegetative and non-vegetative), or the existing soil topography which may result in accelerated storm water runoff, leading to soil erosion and movement of sediment into waters of the state. Examples can include clearing, grading, filling and excavating.
6. "Discharge" means the conveyance, channeling, runoff, or drainage, of storm water, including snow melt, from a construction site.
7. "Energy Dissipation" means methods employed at pipe outlets to prevent erosion. Examples include, but are not limited to; aprons, riprap, splash pads, and gabions which are designed to prevent erosion.
8. "Erosion" means the wearing away of soil by rainfall, surface water runoff, wind, or ice movement.
9. "Erosion Control" means methods employed to prevent erosion. Examples include soil stabilization practices, horizontal slope grading, temporary or permanent cover, and construction phasing.
10. "Exposed Soil Areas" means all areas of the construction site where the perennial vegetation (including trees, shrubs, and brush) has been removed. This includes topsoil stockpile areas, borrow areas and disposal areas within the construction site.

11. **"Final Plans and Specifications"** means the reports, prints, drawings, written descriptions, and clear technical requirements necessary to build a project used by the owner for the purposes of entering into a construction contract.
12. **"Final Stabilization"** means that all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover with a density of 70 percent of the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures have been employed. Examples of vegetative cover practices can be found in Supplemental Specifications to the 1988 Standard Specifications for Construction (Minnesota Department of Transportation, 1991).
13. **"Five or more acres of total land area"** means any project that disturbs at least five acres of land measured by the project's construction corridor, excluding areas staked as not to be disturbed. If the project is less than five acres, but is part of larger common plan of development or sale (where multiple separate and distinct construction activities may be taking place at different times on different schedules but under one plan), it is defined as "five acres or more of total land area."
14. **"General Contractor"** means the party who signs the construction contract with the owner to construct the entire project described in the final plans and specifications. Where the construction project involves more than one contractor, the general contractor will be the party responsible for managing the entire project on behalf of the owner. In some cases, the owner may be the general contractor. In these cases, the owner will sign the permit application as the general contractor and would become the sole permittee.
15. **"Impervious Surface"** means a constructed hard surface that either prevents or retards the entry of water into the soil and causes water to run off the surface in greater quantities and at an increased rate of flow than prior to development. Examples include rooftops, sidewalks, patios, driveways, parking lots, storage areas, and concrete, asphalt, or gravel roads.
16. **"Local Permitting Authority"** means the township, county, municipality, conservation district, watershed district, watershed management organization, or other public entity which has the authority to review and approve construction activities.
17. **"Local Unit of Government's Existing Storm Water Management Plan or Practice"** means plans or practices developed by the local permitting authority under state law for the purposes of protecting water quality.

18. **"National Pollutant Discharge Elimination System (NPDES)"** means the program for issuing, modifying, revoking, reissuing, terminating, monitoring, and enforcing permits under the Clean Water Act (Sections 301, 318, 402, and 405) and United States Code Title 33, Sections 1317, 1328, 1342, and 1345.
19. **"Notice of Termination"** means notice to terminate coverage under this permit after construction is complete, the site has undergone stabilization, and all conditions of this permit have been satisfied. Notice of Termination forms are available from the Agency.
20. **"Owner"** means the person or party possessing the title of the land on which the construction activities will occur; or if the construction activity is for a lease holder, the party or individual identified as the lease holder; or the contracting government agency responsible for the construction activity.
21. **"Permanent Cover"** means final stabilization. Examples include grass, gravel, asphalt, and concrete.
22. **"Paved Surface"** means a constructed hard, smooth surface made of asphalt, concrete or other pavement material. Examples include, but are not limited to, roads, sidewalks, driveways and parking lots.
23. **"Permit"** means a National Pollutant Discharge Elimination System/ State Disposal System (NPDES/SDS) permit.
24. **"Permittee"** means a person, firm, or governmental agency or other institution who signs the application submitted to the Agency and is responsible for compliance with the terms and conditions of this permit.
25. **"Runoff Coefficient"** means the fraction of total precipitation that is not infiltrated into or otherwise retained by the soil, concrete, asphalt or other surface upon which it falls that will appear at the conveyance as runoff.
26. **"Sediment"** means the product of an erosion process; solid material both mineral and organic, that is in suspension, is being transported, or has been moved by water, air, or ice, and has come to rest on the earth's surface either above or below water level.
27. **"Sediment Control"** means methods employed to prevent sediment from leaving the site. Sediment control practices include silt fences, sediment traps, earth dikes, drainage swales, check dams, subsurface drains, pipe slope drains, storm drain inlet protection, and temporary or permanent sedimentation basins.
28. **"Soil"** means the unconsolidated mineral and organic mineral material on the immediate surface of the earth.

29. **"Stabilized"** means the exposed ground surface has been covered by staked sod, riprap, wood fiber blanket, or other material which prevents erosion from occurring. Grass seed is not stabilization.
30. **"Standard Plates"** means general drawings having or showing similar characteristics or qualities that are representative of a construction practice or activity.
31. **"Storm water"** means the precipitation runoff, storm water runoff, snow melt runoff, and any other surface runoff and drainage (defined in 40 CFR 122.26 [b][13]). Storm water does not include construction site dewatering.
32. **"Temporary Protection"** means methods employed to prevent erosion. Examples of temporary include; straw, wood fiber blanket, wood chips, and erosion netting.
33. **"Waters of the State"** means all streams, lakes, ponds, marshes, wetlands, watercourses, waterways, drainage systems and all other bodies or accumulations of waters, natural or artificial, public or private, which are contained within, flow through, or border upon the state or any portions thereof. Waters of the state do not include storm water detention basins, or wetlands constructed for the purposes of treating storm water, which do not discharge to surface waters.

APPENDIX D

RESPONSIBILITIES

A. TRANSFER OWNERSHIP OR CONTROL

This permit may not be assigned or transferred by the permit holder. Where a new general contractor is selected after the submittal of an application, or where the general contractor changes, a new application must be, in accordance with Part I.B., submitted to the Agency at least 48 hours prior to when the general contractor begins work at the site.

B. PERMIT MODIFICATION

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

1. Violation of any terms of this permit;
2. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
3. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
4. Minn. Rules pts. 7001.0170 and 7001.0180.

C. RIGHT OF ENTRY

The Permittee shall, pursuant to Section 308 of the Act and Minnesota Statutes 115.04, allow representatives of the; Agency, local permitting authorities, local soil and water conservation districts, or municipality which operates the storm sewer system, upon presentation of credentials:

1. To enter upon the Permittee's premises where the construction activity is occurring for the purpose of obtaining information, examination of records, conducting surveys or investigations;
2. To bring such equipment upon the Permittee's premises as is necessary to conduct such surveys and investigations;
3. To examine and copy any books, papers, records, or memoranda pertaining to the storm water discharge.
4. To sample and monitor any substances or parameters at any location.

D. CIVIL AND CRIMINAL LIABILITY

Nothing in this permit shall be construed to relieve the Permittee from civil or criminal penalties for noncompliance with the terms and conditions provided herein.

E. OIL AND HAZARDOUS SUBSTANCE LIABILITY

Nothing in this permit shall be construed to preclude the installation of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties to which the Permittee is or may be subject to under Section 311 or the Act and Minn. Stat. chs. 115 and 116, as amended.

F. LIABILITY EXEMPTION

This permit authorizes the Permittee to perform the activities described herein within the conditions set forth. In issuing this permit, the State/Agency assumes no responsibility for any damage to persons, property or the environment caused by the activities authorized or undertaken pursuant to this permit. To the extent the state/agency may have any liability for the activities of its employees, that liability is explicitly limited to that provided in the Torts Claim Act, Minn. Stat. § 3.736.

G. MINNESOTA LAWS

Nothing in this permit shall be construed to preclude the installation of any legal or administrative proceedings or relieve the Permittee from any responsibilities, liabilities, or penalties for violation of effluent and water quality limitations not included in this permit or applicable laws or regulations.

H. PROPERTY RIGHTS

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

I. SEVERABILITY

The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

J. NPDES/SDS RULE

The Permittee shall comply with the provisions of Minn. Rules pts. 7001.0150, subp. 3 and 7001.1090, subp. 1.A,B,C,H,I. This permit does not require the submittal of a data monitoring report.

K. OTHER STATUTES, RULES AND ORDINANCES

The Agency's issuance of a permit does not release the Permittee from any liability, penalty or duty imposed by Minnesota or federal statutes or local ordinances, except the obligation to obtain the permit.

L. MORE STRINGENT RULES

The Agency's issuance of a permit does not prevent the future adoption by the Agency of pollution control rules, standards, or orders more stringent than those now in existence and does not prevent the enforcement of these rules, standards or orders against the Permittee.

M. AGENCY OBLIGATION

The Agency's issuance of a permit does not obligate the Agency to enforce local laws, rules or plans beyond that authorized by Minnesota Statutes.

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01572

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

PART 1 GENERAL

- 1.1 GOVERNMENT POLICY
- 1.2 MANAGEMENT
- 1.3 PLAN
- 1.4 RECORDS
- 1.5 COLLECTION
 - 1.5.1 Source Separated Method.
 - 1.5.2 Co-Mingled Method.
 - 1.5.3 Other Methods.
- 1.6 DISPOSAL
 - 1.6.1 Reuse.
 - 1.6.2 Recycle.
 - 1.6.3 Waste.

-- End of Section Table of Contents --

SECTION 01572

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

PART 1 GENERAL

1.1 GOVERNMENT POLICY

Government policy is to apply sound environmental principles in the design, construction and use of facilities. As part of the implementation of that policy the Contractor shall: (1) practice efficient waste management when sizing, cutting, and installing products and materials and (2) use all reasonable means to divert construction and demolition waste from landfills and incinerators and to facilitate their recycling or reuse.

1.2 MANAGEMENT

The Contractor shall take a pro-active, responsible role in the management of construction and demolition waste and require all subcontractors, vendors, and suppliers to participate in the effort. Construction and demolition waste includes products of demolition or removal, excess or unusable construction materials, packaging materials for construction products, and other materials generated during the construction process but not incorporated into the work. In the management of waste consideration shall be given to the availability of viable markets, the condition of the material, the ability to provide the material in suitable condition and in a quantity acceptable to available markets, and time constraints imposed by internal project completion mandates. The Contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling of waste. Revenues or other savings obtained for salvage, or recycling shall accrue to the Contractor. Firms and facilities used for recycling, reuse, and disposal shall be appropriately permitted for the intended use to the extent required by federal, state, and local regulations.

1.3 PLAN

A waste management plan shall be submitted within 15 days after contract award and prior to initiating any site preparation work. The plan shall include the following:

- a. Name of individuals on the Contractor's staff responsible for waste prevention and management.
- b. Actions that will be taken to reduce solid waste generation.
- c. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas and equipment to be used for processing, sorting, and temporary storage of wastes.

- d. Characterization, including estimated types and quantities, of the waste to be generated.
- e. Name of landfill and/or incinerator to be used and the estimated costs for use, assuming that there would be no salvage or recycling on the project.
- f. Identification of local and regional reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations that accept used materials such as materials exchange networks and Habitat for Humanity.
- g. List of specific waste materials that will be salvaged for resale, salvaged and reused, or recycled. Recycling facilities that will be used shall be identified.
- h. Identification of materials that cannot be recycled/reused with an explanation or justification.
- i. Anticipated net cost savings determined by subtracting Contractor program management costs and the cost of disposal from the revenue generated by sale of the materials and the incineration and/or landfill cost avoidance.

1.4 RECORDS

Records shall be maintained to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. The records shall be made available to the Contracting Officer during construction, and a copy of the records shall be delivered to the Contracting Officer upon completion of the construction.

1.5 COLLECTION

The necessary containers, bins and storage areas to facilitate effective waste management shall be provided and shall be clearly and appropriately identified. Recyclable materials shall be handled to prevent contamination of materials from incompatible products and materials and separated by one of the following methods:

1.5.1 Source Separated Method.

Waste products and materials that are recyclable shall be separated from trash and sorted into appropriately marked separate containers and then transported to the respective recycling facility for further processing.

1.5.2 Co-Mingled Method.

Waste products and recyclable materials shall be placed into a single container and then transported to a recycling facility where the recyclable materials are sorted and processed.

1.5.3 Other Methods.

Other methods proposed by the Contractor may be used when approved by the Contracting Officer.

1.6 DISPOSAL

Except as otherwise specified in other sections of the specifications, disposal shall be in accordance with the following:

1.6.1 Reuse.

First consideration shall be given to salvage for reuse since little or no re-processing is necessary for this method, and less pollution is created when items are reused in their original form. Sale or donation of waste suitable for reuse shall be considered. Salvaged materials, other than those specified in other sections to be salvaged and reinstalled, shall not be used in this project.

1.6.2 Recycle.

Waste materials not suitable for reuse, but having value as being recyclable, shall be made available for recycling whenever economically feasible.

1.6.3 Waste.

Materials with no practical use or economic benefit shall be disposed at a landfill or incinerator.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01670

RECYCLED / RECOVERED MATERIALS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 OBJECTIVES
- 1.3 EPA DESIGNATED ITEMS INCORPORATED IN THE WORK
- 1.4 EPA PROPOSED ITEMS INCORPORATED IN THE WORK
- 1.5 EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED
IN THE WORK

-- End of Section Table of Contents --

SECTION 01670

RECYCLED / RECOVERED MATERIALS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 247	Comprehensive Procurement Guideline for Products Containing Recovered Material
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1.2 OBJECTIVES

Government procurement policy is to acquire, in a cost effective manner, items containing the highest percentage of recycled and recovered materials practicable consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials. The Environmental Protection Agency (EPA) has designated certain items which must contain a specified percent range of recovered or recycled materials. EPA designated products specified in this contract comply with the stated policy and with the EPA guidelines. The Contractor shall make all reasonable efforts to use recycled and recovered materials in providing the EPA designated products and in otherwise utilizing recycled and recovered materials in the execution of the work.

1.3 EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

Various sections of the specifications contain requirements for materials that have been designated by EPA as being products which are or can be made with recovered or recycled materials. These items, when incorporated into the work under this contract, shall contain at least the specified percentage of recycled or recovered materials unless adequate justification (non-availability) for non-use is provided. When a designated item is specified as an option to a non-designated item, the designated item requirements apply only if the designated item is used in the work.

1.4 EPA PROPOSED ITEMS INCORPORATED IN THE WORK

Products other than those designated by EPA are still being researched and are being considered for future Comprehensive Procurement Guideline (CPG) designation. It is recommended that these items, when incorporated in the

work under this contract, contain the highest practicable percentage of recycled or recovered materials, provided specified requirements are also met.

1.5 EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

There are many products listed in 40 CFR 247 which have been designated or proposed by EPA to include recycled or recovered materials that may be used by the Contractor in performing the work but will not be incorporated into the work. These products include office products, temporary traffic control products, and pallets. It is recommended that these non-construction products, when used in the conduct of the work, contain the highest practicable percentage of recycled or recovered materials and that these products be recycled when no longer needed.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01780

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SUBMITTALS

1.2 As-Built Drawings

1.3 CONTRACTOR RECORD DRAWINGS

1.3.1 Changes and Corrections

1.2.6 Drawing Standards

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section Table of Contents --

SECTION 01780

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

As-Built Drawings; G,GEN

Contractor record drawings showing final as-built conditions of the project.

1.2 As-Built Drawings

Paper prints and reproducible drawings will become the property of the Government upon final approval. Failure to submit final as-built drawings and marked prints, as required herein, will be cause for withholding payment due the Contractor under this contract. These drawings shall be furnished to the Contracting Officer within 30 days after the required contract completion date. Approval and acceptance of final as-built drawings shall be accomplished before final payment is made to the Contractor.

1.3 CONTRACTOR RECORD DRAWINGS

The Contractor shall maintain a separate set of marked-up full-scale contract drawings indicating as-built conditions. These drawings shall show all changes and revisions made up to the time the work is completed and accepted. These drawings shall be maintained in a current condition at all times until completion of the work and shall be available for review by Government personnel at all times. All variations from the contract drawings, for whatever reason, including those occasioned by modifications, optional materials, and the required coordination between trades, shall be indicated.

1.3.1 Changes and Corrections

The working and final as-built drawings shall show, but shall not be limited to, the following information:

- a. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.
- b. Surveyed elevations shall be listed for all sewer inverts and castings.
- c. The location and dimensions of any changes within buildings or structures.
- d. Changes in details of design.
- e. The topography, invert elevations and grades of drainage installed or affected as part of the project construction.

1.2.6 Drawing Standards

- a. Deleted items shall be indicated in red.
- b. Added items or changed locations shall be shown in green.
- c. Variations shall be shown in the same general detail utilized in the contract drawings.
- d. Revisions shall be shown on all drawings and details related to the changed feature.
- e. All markups shall be neat, clean and legible.
- f. Where contract drawings or specifications present options, only the option selected for construction shall be shown.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02230

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Clearing

1.1.2 Grubbing

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

3.1.1 Clearing

3.1.2 Grubbing

3.2 TREE REMOVAL

3.3 DISPOSAL OF MATERIALS

3.3.1 Materials Other Than Salable Timber

3.4 ACCEPTANCE

-- End of Section Table of Contents --

SECTION 02230

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Clearing

Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including down timber, snags, brush, and rubbish occurring in the areas to be cleared.

1.1.2 Grubbing

Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

All clearing and grubbing will be as required within the work limits to facilitate construction of the project components.

3.1.1 Clearing

Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Trees designated to be left standing within the cleared areas shall be trimmed of dead branches 1-1/2 inches or more in diameter and shall be trimmed of all branches the heights indicated or directed. Limbs and branches to be trimmed shall be neatly cut close to the bole of the tree or main branches. Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require. Clearing shall also include the removal and disposal of structures that obtrude, encroach upon, or otherwise obstruct the work.

3.1.2 Grubbing

Material to be grubbed, together with logs and other organic or metallic

debris not suitable for foundation purposes, shall be removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas under this contract, such as areas for buildings, and areas to be paved. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

3.2 TREE REMOVAL

Where indicated or directed, trees and stumps that are designated as trees shall be removed from areas outside those areas designated for clearing and grubbing. This work shall include the felling of such trees and the removal of their stumps and roots as specified in paragraph GRUBBING. Trees shall be disposed of as specified in paragraph DISPOSAL OF MATERIALS.

3.3 DISPOSAL OF MATERIALS

3.3.1 Materials Other Than Salable Timber

Logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations, except for salable timber, shall be disposed of outside the limits of Government-controlled land at the Contractor's responsibility, except when otherwise directed in writing. Such directive will state the conditions covering the disposal of such products and will also state the areas in which they may be placed.

3.4 ACCEPTANCE

Upon completion of the site clearing, obtain the Contracting Officer's acceptance of the extent of clearing and grubbing.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02300

EARTHWORK

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 SUBSURFACE DATA

PART 2 PRODUCTS

- 2.1 DEFINITIONS
 - 2.1.1 Satisfactory Materials
 - 2.1.2 Cohesionless and Cohesive Materials
 - 2.1.3 Proctor
- 2.2 MATERIALS
 - 2.2.1 Select Granular Borrow
 - 2.2.2 Select Granular Borrow (Modified)
 - 2.2.3 Impervious Fill
 - 2.2.4 Embankment Fill
 - 2.2.4.1 Compacted Fill
 - 2.2.4.2 Semi-Compacted Fill
 - 2.2.4.3 Disposal Fill
- 2.3 CONSTRUCTION EQUIPMENT
 - 2.3.1 Levees

PART 3 EXECUTION

- 3.1 CLASSIFICATION OF SOIL MATERIALS
- 3.2 STOCKPILES
- 3.3 STRIPPING OF TOPSOIL
- 3.4 COMMON EXCAVATION
 - 3.4.1 Changes and Differing Site Conditions
- 3.5 DITCHES AND DIVERSION CHANNEL
- 3.6 BORROW MATERIAL
 - 3.6.1 Common Borrow
- 3.7 EMBANKMENTS
- 3.8 STRUCTURES
 - 3.8.1 General
 - 3.8.2 Overdepth Excavation
 - 3.8.3 Drainage
 - 3.8.4 Dewatering
 - 3.8.5 Footing Excavation
 - 3.8.5.1 Pile Foundations
 - 3.8.6 Backfilling
- 3.9 LEVEES AND SPOIL PILES

- 3.9.1 Embankment
- 3.10 ROADWAY AND MISCELLANEOUS STRUCTURES
 - 3.10.1 Subgrade Preparation
 - 3.10.2 Subgrade Correction
- 3.11 FINISHING
 - 3.11.1 Roadway Subgrade Tolerances
 - 3.11.2 Embankment Tolerances
 - 3.11.3 Channel Tolerances
- 3.12 PLACING TOPSOIL
- 3.13 COMPACTION
 - 3.13.1 Moisture Control
 - 3.13.2 Placement And Compaction
 - 3.13.3 Disposal Fill
 - 3.13.4 Semi Compacted Fill
- 3.14 TESTING
 - 3.14.1 General
 - 3.14.2 Transmittal
 - 3.14.3 Field Density Tests
 - 3.14.4 Proctor Tests
 - 3.14.5 Corrective Action
 - 3.14.6 Testing Schedule
 - 3.14.7 Testing of Disposal Fill
- 3.15 NUCLEAR DENSITY TESTING EQUIPMENT
- 3.16 SUBGRADE AND EMBANKMENT PROTECTION

-- End of Section Table of Contents --

SECTION 02300

EARTHWORK

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 117	(1995) Materials Finer Than 75 Micrometers (No. 200 Sieve) in Mineral Aggregates by Washing
ASTM C 136	(1996a) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 422	(1963; R 1998) Particle Size Analysis of Soils
ASTM D 698	(1991; R 1998) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ³) (600 KN-m/m ³)
ASTM D 1556	(1996) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 2487	(1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2488	(1993) Description and Identification of Soils
ASTM D 2922	(1996) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(1988; R 1996) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 4318	(1998) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 4718	(1987; R 1994) Correction of Unit Weight

and Water Content for Soils Containing
Oversize Particles

MINNESOTA DEPARTMENT OF TRANSPORTATION (Mn/DOT)

Mn/DOT 2112	Subgrade Preparation
Mn/DOT 2451	Structure Excavations and Backfills
Mn/DOT 3149	Granular Material

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-06 Test Reports

Testing;

A summary of testing results indicated in PARAGRAPH: TESTING shall be submitted when the site work is substantially complete. The Contracting Officer shall be informed of test results daily for direction on corrective action required. Draft copies of field testing results shall be furnished to the Contracting Officer on a frequent and regular basis as directed, but do not need to be formally transmitted through the submittal process.

Daily Report Forms;

A compilation of the daily report forms for earthwork observation and inspection trench observations ordered by date shall be submitted when the work is substantially complete. Preliminary copies shall be furnished to the Contracting Officer on a weekly or monthly basis as directed, but do not need to be formally transmitted through the submittal process.

Reference the Physical Data clause in Section 00800.

1.3 SUBSURFACE DATA

The material to be excavated generally consists of silt and clay with relatively high moisture contents in many areas. Available subsurface data indicates that the measured ground water levels are well above the bottom of required excavation. Soil borings containing more specific subsurface information are included in the plan reference drawings.

PART 2 PRODUCTS

2.1 DEFINITIONS

2.1.1 Satisfactory Materials

Material placed as compacted fill, semi-compacted fill, or backfill shall consist of material classified by ASTM D2487 as GW, GP, GC, GM, SP, SM, SC, CH, ML, MH, CL AND SW. The material shall be free of ice, snow, frozen earth, trash, debris, sod, roots, organic matter, or stones larger than 3 inches in any dimension. All materials shall be of a character and quality satisfactory for the purpose intended. Maximum extent of disposal fill may have frozen earth.

2.1.2 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic.

2.1.3 Proctor

Degree of compaction required is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 698. The maximum density is hereafter abbreviated as the "Standard Proctor" or "Proctor" value.

2.2 MATERIALS

The material shall be free of ice, snow, frozen earth, trash, debris, sod, roots, organic matter, or stones larger than 3 inches in any dimension.

2.2.1 Select Granular Borrow

Select granular borrow shall meet the requirements of Mn/DOT 3149 and shall be any pit-run or crusher-run material that is so graded from coarse to fine that the ratio of the portion passing the #200 sieve divided by the portion passing the 1-inch sieve may not exceed 12 percent by mass. The material shall not contain oversize salvaged bituminous particles or stone, rock, or concrete fragments in excess of the quantity or size permissible for placement as specified. This material is specified for use on roadways.

2.2.2 Select Granular Borrow (Modified)

Select granular borrow (modified) shall meet the requirements of Mn/DOT 3149 and be any pit-run or crusher-run material that is so graded from coarse to fine that the ratio of the portion passing the #200 sieve divided by the portion passing the 1-inch sieve may not exceed 5 percent by mass. The material shall not contain oversize salvaged bituminous particles or stone, rock, or concrete fragments in excess of the quantity or size permissible for placement as specified. This material is specified for use in structures and bridge approach panels.

2.2.3 Impervious Fill

Impervious fill shall meet requirements for satisfactory cohesive material.

2.2.4 Embankment Fill

The contract drawings indicate three types of fill to be used. These include compacted fill for levees and existing ditch areas, semi-compacted fill for levee south of Highway 210, and disposal fill for spoil piles. Material requirements for these types of fill are as follows:

2.2.4.1 Compacted Fill

Compacted fill shall consist of satisfactory cohesive material free from ice lenses and frozen material.

2.2.4.2 Semi-Compacted Fill

Semi-compacted fill shall have the same requirements as compacted fill.

2.2.4.3 Disposal Fill

Minimum extent of disposal fill shall have the same requirements as compacted fill.

Maximum extent of disposal fill may be any material obtained from required excavations. This includes frozen soil, muck, organic soil or large stones. The spoil piles south of Highway 210 shall contain only satisfactory cohesive fill.

2.3 CONSTRUCTION EQUIPMENT

Compaction equipment shall consist of sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil type being compacted. Water flooding or jetting methods of compaction will not be permitted for any soil types. Sprinkling equipment for cohesive soils shall apply water uniformly, in controlled quantities, and be capable of variable application widths.

2.3.1 Levees

Use of sheepsfoot rollers (vibratory or non-vibratory), or scarification between lifts, is required for construction of dams, dikes, or levees. Construction equipment and methods shall avoid poor bonding between lifts, characterized by layered or laminated texture at the lift interfaces. Smooth surfaces (such as produced from smooth drum rollers, rubber tired rollers, and construction traffic) shall be scarified prior to placing subsequent lifts.

PART 3 EXECUTION

3.1 CLASSIFICATION OF SOIL MATERIALS

Classification of soil materials shall be performed by the Contractor in accordance with ASTM D 2488. The Contracting Officer reserves the right to revise the Contractor classifications. In the case of disagreement, the Contracting Officer's classification will govern unless the soils are classified in accordance with ASTM D 2487. Notwithstanding provisions of

FAR 52.246-12 INSPECTION OF CONSTRUCTION, testing completed by the Contractor in conjunction with soil material classification will be considered incidental to the contract work.

3.2 STOCKPILES

Stockpiles of satisfactory materials shall be placed and graded as specified. Stockpiles shall be kept in a neat and well drained condition, giving due consideration to drainage at all times. The ground surface at stockpile locations shall be cleared, grubbed, and sealed. Satisfactory and unsatisfactory materials shall be separately stockpiled. Stockpiles of satisfactory materials shall be protected from contamination which may destroy the quality and fitness of the stockpiled material. If the Contractor fails to protect the stockpiles, and any material becomes contaminated, frozen or too wet for use, such material shall be removed and replaced with satisfactory material from approved sources at no additional cost to the Government.

3.3 STRIPPING OF TOPSOIL

Where indicated or directed, topsoil shall be stripped to a depth of 12 inches. Topsoil shall be spread on areas already graded and prepared for topsoil, or transported and deposited in stockpiles convenient to areas that are to receive application of the topsoil later, or at locations indicated or specified. Topsoil shall be kept separate from other excavated materials, brush, litter, objectionable weeds, roots, stones larger than 2 inches in diameter, and other materials that would interfere with planting and maintenance operations. A minimum of 17,000 cubic yards of surplus topsoil shall be stockpiled within the staging area south of Highway 210 and west of Highway 9. Any surplus of topsoil in excess of the amount required for stockpiling shall become the Contractor's property and may be sold at commercial value.

3.4 COMMON EXCAVATION

After topsoil removal has been completed, excavation of every description, regardless of material encountered, within the grading limits of the project shall be performed to the lines and grades indicated. Excavation material suitable for use as fill shall be transported to and placed in fill areas within the limits of the work. All unsatisfactory material, including any soil which is disturbed by the Contractor's operations or softened due to exposure to the elements and water, and surplus material shall be disposed of in spoil piles located north of Highway 210. Unsatisfactory material may not be placed in the spoil piles south of Highway 210. Excavations carried below the depths indicated shall be refilled to the proper grade with satisfactory material. During construction, excavation and fill shall be performed in a manner and sequence that will provide proper drainage at all times.

The Contractor shall be sensitive to water ponding on fields adjacent to the project throughout construction. Due to the large spoil piles that will negatively impact existing drainage measures, the Contractor shall take all steps necessary to maintain drainage flow from the fields. This work includes, but is not limited to, installation of side ditch inlets and

the use of minor ditching to maintain sufficient drainage from the fields. Additional steps shall be taken at the direction of the Contracting Officer.

3.4.1 Changes and Differing Site Conditions

Any excavation subgrades that are unstable, pump, rut excessively, reveal soil conditions that are substantially different from that indicated in the contract, or are unsuitable for proceeding with the work shall immediately be reported to the Contracting Officer. In the event that it is necessary to remove material to a depth greater than specified, the Contracting Officer will provide direction for changed work; and an adjustment in the contract price will be considered in accordance with the contract. Unsatisfactory material encountered below the grades shown shall be removed as directed. Determination of elevations and measurements of approved overdepth excavation of unsatisfactory material below grades indicated shall be done under the direction of the Contracting Officer. The Contracting Officer shall be notified prior to proceeding with any unauthorized work. Additional work not authorized by the Contracting Officer shall be at the Contractor's expense.

3.5 DITCHES AND DIVERSION CHANNEL

Ditches and diversion channel shall be cut accurately to the cross sections and grades indicated. Ditches shall be finished in a manner that will result in effective drainage. All roots, stumps, rock, and foreign matter in the sides and bottom of ditches and diversion channel shall be trimmed and dressed or removed to conform to the slope, grade, and shape of the section indicated. Care shall be taken not to excavate below the grades indicated. Excessive excavation shall be backfilled to grade with properly placed and compacted material. All ditches excavated under this section shall be maintained until final acceptance of the work. Satisfactory material excavated from ditches and channel shall be placed in fill areas. Unsatisfactory and excess excavated material shall be properly disposed of.

3.6 BORROW MATERIAL

3.6.1 Common Borrow

It is anticipated that all cohesive fill will be obtained from required excavation. No borrow sources will be provided for cohesive or cohesionless fill. Granular, select granular, and select granular (modified) borrow sources shall be discovered by the Contractor and subject to approval by the Contracting Officer.

3.7 EMBANKMENTS

Fills and embankments shall be constructed at the locations and to lines and grades indicated. Fill shall meet the material specifications for the zones indicated on the drawings. The material shall be placed in successive horizontal layers for the full width of the cross section and shall be compacted as specified. Each layer shall be compacted before the overlaying lift is placed. Fill material for embankment needed to create the spoil pile configuration shall be placed to balance the excavation quantity. The

spoil pile configuration on the plan is a guide and can be adjusted slightly to balance the excavation quantity. The 3.5 horizontal to 1 vertical foreslope must be maintained. The 10 horizontal to 1 vertical back-slope shall be the steepest acceptable and may be altered by the Contracting Officer dependent upon site conditions.

3.8 STRUCTURES

3.8.1 General

Excavation shall conform to the dimensions and elevations indicated for each building, structure, and footing including necessary oversizing. Excavations shall extend a sufficient distance from walls and footings to allow for placing and removal of forms.

3.8.2 Overdepth Excavation

Excavations below indicated depths will not be permitted except to remove unsatisfactory material. Material removed below the depths indicated or beyond the tolerances specified shall be replaced with properly placed and compacted fill at no additional cost to the Government, except that concrete footings may be increased in thickness to the bottom of the overdepth excavation if approved by the Contracting Officer.

3.8.3 Drainage

Surface water shall be directed away from excavation and construction sites so as to prevent erosion and undermining of foundations. Diversion ditches, dikes and grading shall be provided and maintained as necessary during construction. Excavated slopes and backfill surfaces shall be protected to prevent erosion and sloughing. Excavation shall be performed so that the site and the area immediately surrounding the site and affecting operations at the site shall be continually and effectively drained.

3.8.4 Dewatering

See Section 01000 GENERAL for dewatering requirements.

3.8.5 Footing Excavation

Excavation to final grade of all surfaces to support concrete shall not be made until just before concrete is to be placed. In building areas with shallow foundations, granular subgrades shall be surface compacted with at least two passes using a vibratory compactor. High plasticity clays shall be protected to avoid desiccation prior to concrete placement.

3.8.5.1 Pile Foundations

The ground surface in the structure area shall be prepared before driving piles to minimize grading requirements after pile installation. Isolated pits and vaults shall be excavated after all bearing piles are driven.

3.8.6 Backfilling

Backfilling shall not begin until construction below finish grade has been approved, underground utilities systems have been inspected, tested and approved; concrete forms have been removed and the excavation cleaned of frost, trash and debris. Backfill shall not be placed against foundation walls prior to 7 days after completion of the walls. As far as practicable, backfill shall be brought up evenly on each side of the wall. Trenches not immediately backfilled to grade shall be sloped to drain if practicable. Heavy equipment for spreading and compacting backfill shall not be operated closer to a foundation or other underground structural element than a distance equal to the height of backfill above the top of footing; the area remaining shall be compacted with power driven hand tampers suitable for the material being compacted.

3.9 LEVEES AND SPOIL PILES

3.9.1 Embankment

If not specifically identified, compacted fill, semi-compacted fill, or other unclassified material shall be sorted to the extent practicable with the more cohesive and less pervious material placed channel-side, and sandy free-draining material placed landside.

3.10 ROADWAY AND MISCELLANEOUS STRUCTURES

3.10.1 Subgrade Preparation

All areas upon which fill is to be placed shall be stripped before the fill is started. Material shall not be placed on surfaces that are muddy, frozen, contain frost, or where unsatisfactory material remains in or under the fill. For cohesionless soils, the subgrade surface shall be compacted to at least 100 Percent of the Standard Proctor density. For cohesive soils, the subgrade shall be proof rolled with rubber tired equipment and any soft areas shall be brought to the Contracting Officer's attention. Sloped ground surfaces steeper than one vertical to four horizontal on which fill is to be placed shall be stepped such that the fill material will bond with the existing surface. All roadway subgrade preparations shall be done in accordance with the requirements of Mn/DOT 2112. Geotextile fabric shall conform to Mn/DOT 3733, Type V and meet the requirements of Section 02373 GEOTEXTILES.

3.10.2 Subgrade Correction

Soft or otherwise unsatisfactory material (all unsuitable soils) shall be removed and replaced with Select Granular Borrow or other approved material as directed. Low areas resulting from removal of unsatisfactory material shall be brought up to required grade with satisfactory materials, and the entire subgrade shall be shaped to line, grade, and cross section and compacted as specified.

3.11 FINISHING

All areas covered by the project, including excavated and filled sections and adjacent transition areas, shall be uniformly smooth-graded. The finished surface shall be reasonably smooth, compacted, and free from

irregular surface changes. The degree of finish shall be that ordinarily obtainable from blade-grader operations, except as otherwise specified. Ditches and gutters shall be finished to permit adequate drainage. The surface of areas to be turfed shall be finished to a smoothness suitable for the application of turfing.

3.11.1 Roadway Subgrade Tolerances

When the final layer of base has been completed, and at the time any additional construction is to be placed thereon, the finished surface of the base shall not vary more than 0.05 feet from the plan elevation.

3.11.2 Embankment Tolerances

The finished surface of compacted and semi-compacted levees and embankments not used for roadways shall not vary more than plus (+) 0.5 feet except the spoil piles which may vary in height from the plan configuration as determined by the Contracting Officer.

3.11.3 Channel Tolerances

The finished surface of the diversion channel bottom shall not vary more than minus (-) 0.15 feet.

3.12 PLACING TOPSOIL

Topsoil placement is covered in Section 02920 SEEDING, SODDING, AND TOPSOIL. The finished grade shall be such that after subsequent treatment (tillage, topsoiling and planting) the planted grade shall join 1 inch below adjoining surfaced grade of walks, curbs and drives and even with adjoining turfed areas.

3.13 COMPACTION

3.13.1 Moisture Control

Control of moisture in the fill shall be maintained to provide acceptable compaction. Dried or crusted cohesive soils shall be plowed, disked or otherwise broken up before compaction. If water is added to fills, the layer shall be spread in even lifts, moistened as necessary, thoroughly mixed, and compacted.

3.13.2 Placement And Compaction

For all types of fill except disposal fill, each layer shall be spread uniformly on an acceptable soil surface. The type of fill, its maximum uncompacted lift thickness, and the minimum compaction requirements (Percent of Standard Proctor density) to which each type of fill shall be compacted shall be as listed below.

<u>Fill Zone</u>	<u>Maximum Uncompacted Lift Thickness (inches)</u>	<u>Percent of Standard Proctor Density</u>
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General Grading	12	95
Levees - Compacted Fill	12	95
Levees - Semi-Compacted	12	See 3.13.4
Spoil Piles - Disposal Fill	N/A	See 3.13.3
Utility and Storm Drain Backfill	Use specification for zone where utility is located.	

a. Satisfactory materials shall be placed in horizontal layers not exceeding 6 inches loose depth when hand operated compactors are used.

b. Embankments and subgrade under pavements shall be compacted to at least the Percent of Standard Proctor density as follows:

(1) For fill sections the top 36 inches below the aggregate base course shall be placed in uncompacted lifts not exceeding 9 inches and compacted to at least 100 Percent of the Standard Proctor density at a moisture content of +/- 3% of Optimum Moisture Content(OMC).

(2) For cut sections in cohesionless soils the subgrade surface shall be compacted to at least 100 Percent of the Standard Proctor density. For cut sections in cohesive soils, the subgrade shall be proof rolled and any soft areas shall be brought to the Contracting Officer's attention.

(3) For pavement subgrade, compact to 100 percent of Standard Proctor maximum dry density at a moisture content of +/- 3% OMC. Refer to MnDOT 2111.

3.13.3 Disposal Fill

It is anticipated that disposal fill will be placed in loose piles after removal from required excavation. The surface of the piles will be graded to provide a uniform free draining surface and the entire final surface will be compacted by a minimum of 2 passes of a crawler type tractor weighing not less than 20,000 lbs or other approved compaction equipment. The compaction should include the channel side slope of the disposal fill and the landward side slope of the disposal fill. This compaction should be accomplished prior to spreading of the topsoil. The intent of the design is to have a relatively smooth surface which provides free drainage.

The top of the disposal fills should be sloped as necessary to provide drainage. Disposal fill south of Highway 210 must meet the requirements of impervious fill. Disposal fill located north of Highway 210 may meet the maximum extent allowable for disposal fill.

3.13.4 Semi Compacted Fill

Semi compacted fill shall be placed in 12-inch lifts. Each lift shall have a minimum of 5 passes over the entire surface by a crawler type tractor weighing not less than 20,000 pounds or 5 passes of other approved

compaction equipment.

3.14 TESTING

3.14.1 General

All testing expenses shall be the Contractor's responsibility. Prior to sampling and testing the work, testing laboratories shall be inspected and approved in accordance with SECTION 01451 CONTRACTOR QUALITY CONTROL. The Contracting Officer reserves the right to direct the location and select the material for samples to be tested and to direct where and when moisture-density tests shall be performed.

3.14.2 Transmittal

The Contracting Officer shall be informed of test results daily for direction on corrective action required. Draft copies of field testing results shall be submitted to the Contracting Officer on a frequent and regular basis, as directed.

3.14.3 Field Density Tests

Report forms for summaries of field density tests shall include the minimum information shown below. Additional data required by the applicable ASTM test methods shall be kept on file by the Contractor. Tests shall be numbered sequentially throughout the job, and retests shall reference the original test number (1A, 1B, etc.)/

1. Test Number
2. Dry density, water content and gravel content of field test
3. Proctor Test Number, maximum dry density, optimum moisture content, and gravel content of Proctor test.
4. Relative Compaction
5. Each field test shall be plotted on the graph of the results of the applicable Proctor test. Multiple field test results may be on one graph, provided each test is clearly marked, the Proctor test results are clearly marked and distinguishable from the field test results, and only one Proctor test applies to all the field tests.

3.14.4 Proctor Tests

Report forms for summaries of Proctor tests shall include the minimum information shown below. A Proctor test includes sufficient individual samples (at least 4) of varying moisture content to generate a plot showing the maximum density and corresponding moisture content. Additional data required by the applicable ASTM test methods shall be kept on file by the Contractor. Jar samples shall be retained by the testing laboratory for each Proctor test until field testing is completed.

1. Test Number and method
2. Sample location and visual soil description
3. Maximum dry density, and optimum water content
4. Gravel contents in sample and test specimens
5. A graph of the moisture-density relationship

3.14.5 Corrective Action

Tests of materials which do not meet the contract requirements (failing test) will not be counted as part of the required testing. Each such failing test must be retaken at the same location as the failing test was taken. If testing indicates material does not meet the contract requirements, the material represented by the failing test shall not be placed in the contract work or shall be recompact or removed. The quantity of material represented by the failing test shall be determined by the Contracting Officer up to the quantity represented by the testing frequency. The Contractor may increase testing frequency in the vicinity of a failing test in order to reduce removal requirements, as approved by the Contracting Officer. Such increases in testing frequency shall be at the Contractor's expense and at no additional cost to the Government.

3.14.6 Testing Schedule

a. Moisture-Density Relations (ASTM D 698)

One test for each material variation, not less than 3 tests total.

b. In-Place Densities (ASTM D 1556 or ASTM D 2922)

(1) Typical, 1 test per 2000 CY of fill placed

(2) Structure foundations and floor slabs, not less than 1 test for each 2 vertical feet of fill

(3) Utility trench backfill below pavements and slabs, not less than 1 test per 2 vertical feet per 300 linear feet

c. Percent Passing No. 200 sieve (ASTM C 117)

(1) Select Granular Fill, 1 test per 1000 CY of fill placed, not less than 1 test for each source placed

(2) Granular Fill, 1 test per 5000 CY of fill placed, not less than 1 test for each source

d. Sieve Analysis, (ASTM C 136)

(1) Select Granular Fill, 1 test for each source

e. Plasticity Index (ASTM D 4318)

(1) Cohesive soils, 1 test for each Proctor test

f. No testing will be required for disposal fill north of Highway 210.

3.14.7 Testing of Disposal Fill

The disposal fill placed south of Highway U.S. 210 will serve as a designated borrow source for the levee construction during the Stage 2

portion of the Breckenridge Project. For this reason, the Contractor will be required to perform an exploration program for the disposal fill in the area south of Highway 210. The exploration program will consist of five test pits excavated from the top surface of the disposal pile to the underlying natural ground surface. The location of the test pits will be as directed by the Contracting Officer. A composite sample will be obtained from each of the test pits in sufficient volume to run a Standard Proctor density moisture content relationship. One set of liquid and plastic limits and one hydrometer analysis shall be run for each of these five composite samples. In addition to developing the Proctor curve, five jar samples shall be obtained at equal intervals along the face of each test pit. Natural moisture content shall be determined for each of these jar samples. This procedure shall be repeated for each of the five test pits. This test pit program shall be scheduled at the completion of the Stage 1 project and costs shall be incidental to the excavation. Scheduling of the testing and exploration shall be approved by the Contracting Officer.

3.15 NUCLEAR DENSITY TESTING EQUIPMENT

Nuclear density testing equipment shall be used in general accordance with ASTM D 2922 and ASTM D 3017. In addition, the following conditions shall apply:

- a. Prior to using the nuclear density testing equipment on the site, the Contractor shall submit to the Contracting Officer a certification that the operator has completed a training course approved by the nuclear density testing equipment manufacturer, the record of the most recent calibration of the equipment, and a copy of the most recent statistical check of the standard count precision.
- b. The first test and every tenth test thereafter shall include a sand cone correlation test. The sand cone test shall be centered over the prepared surface for the nuclear test, shall include a nominal 6 inch diameter sand cone, and shall include a minimum wet soil weight of 6 pounds extracted from the hole. In addition, testing of aggregate base soils shall include a minimum of 3 sand cone correlations for each day of testing; and testing of bituminous shall include a minimum of 3 core densities for each day of testing. The density correlations shall be submitted with test results. Each transmittal including density test data shall include a summary of all density correlations for the job neatly prepared on a summary sheet including at a minimum:
 - (1) date, meter serial number and operators initials.
 - (2) standard count and adjustment data for each test.
 - (3) material type.
 - (4) probe depth.
 - (5) moisture content by each test method and the deviation.
 - (6) wet density by each test method and the deviation.
- c. The nuclear density testing equipment shall be capable of extending a probe 6 inches minimum down into a hole. The probe shall generally be extended to the maximum depth obtainable.

d. Nuclear density testing equipment used within 2 vertical feet from the existing ground water level, 5 horizontal feet from a vertical wall or massive concrete structure, or in a trench shall have the standard count changed before and after each test, or the manufacturers published correction procedure shall be followed.

e. Nuclear density testing equipment shall not be used during rain.

3.16 SUBGRADE AND EMBANKMENT PROTECTION

Compacted subgrades that are disturbed by the Contractor's operations or adverse weather shall be scarified and compacted as specified herein to the required density prior to further construction thereon. Subgrades not meeting the specifications for finish, material type and density at the time of surface material placement shall be corrected at the Contractor's expense. Cohesive embankments and subgrades shall be kept crowned or sloped for drainage. Newly graded areas shall be protected from traffic and erosion. Any settlement or washing away that may occur from any cause shall be repaired. No base course or pavement shall be laid until the subgrade has been checked and approved by the Contracting Officer. Ditches and drains along subgrade shall be maintained to provide effective drainage. All work shall implement best management practices for erosion control.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02315

EXCAVATION, FILLING AND BACKFILLING FOR STRUCTURES

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 DEGREE OF COMPACTION
- 1.3 SUBMITTALS

PART 2 PRODUCTS

- 2.1 MATERIALS
 - 2.1.1 Satisfactory Materials
 - 2.1.2 Unsatisfactory Materials
 - 2.1.3 Cohesionless and Cohesive Materials
 - 2.1.4 Select Granular Borrow (Modified)

PART 3 EXECUTION

- 3.1 CLEARING AND GRUBBING
- 3.2 TOPSOIL
- 3.3 EXCAVATION
- 3.4 DRAINAGE AND DEWATERING
 - 3.4.1 Drainage
 - 3.4.2 Dewatering
- 3.5 SHORING
- 3.6 CLASSIFICATION OF EXCAVATION
- 3.7 BORROW
- 3.8 EXCAVATED MATERIALS
- 3.9 FINAL GRADE OF SURFACES TO SUPPORT CONCRETE
- 3.10 SUBGRADE PREPARATION
- 3.11 FILLING AND BACKFILLING
- 3.12 TESTING
 - 3.12.1 In-Place Densities
 - 3.12.1.1 In-Place Density of Subgrades
 - 3.12.1.2 In-Place Density of Fills and Backfills
 - 3.12.2 Optimum Moisture and Laboratory Maximum Density
- 3.13 GRADING
- 3.14 TOPSOIL AND SEEDING
- 3.15 PROTECTION

-- End of Section Table of Contents --

SECTION 02315

EXCAVATION, FILLING AND BACKFILLING FOR STRUCTURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 698	(1991; R 1998) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ³) (600 KN-m/m ³)
ASTM D 1556	(1990; R 1996el) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 2167	(1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2216	(1998) Laboratory Determination of Water (Moisture) Content of Soil and Rock
ASTM D 2487	(1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(1996el) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 2937	(1994) Density of Soil in Place by the Drive-Cylinder Method
ASTM D 3017	(1988; R 1996el) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 4318	(1998) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.2 DEGREE OF COMPACTION

Degree of compaction is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 698, abbreviated as

percent laboratory maximum density.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-06 Test Reports

Testing

Copies of all laboratory and field test reports within 24 hours of the completion of the test.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Satisfactory Materials

Satisfactory materials shall comprise any materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, SP, SM, SW-SM, SC, SW-SC, SP-SM, SP-SC, CL, ML, CL-ML, CH, MH.

2.1.2 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills, trash, refuse, or backfills from previous construction. Unsatisfactory material also includes material classified as satisfactory which contains root and other organic matter, frozen material, and stones larger than 3 inches. The Contracting Officer shall be notified of any contaminated materials.

2.1.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM, GP-GM, GW-GM, SW-SM, SP-SM, and SM shall be identified as cohesionless only when the fines are nonplastic.

2.1.4 Select Granular Borrow (Modified)

Select granular borrow (modified) shall be in accordance with the requirements specified in Section 02300 EARTHWORK.

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

Clearing and grubbing is specified in Section 02230 CLEARING AND GRUBBING.

3.2 TOPSOIL

Topsoil shall be stripped to a minimum depth of 12 inches below existing grade within the designated excavations and grading lines and deposited in storage piles for later use. Excess topsoil shall be handled as covered in Section 02300 EARTHWORK.

3.3 EXCAVATION

Excavation shall conform to the dimensions and elevations indicated for each building, structure, and footing except as specified. Excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms. Excavations below indicated depths will not be permitted except to remove unsatisfactory material. Unsatisfactory material encountered below the grades shown shall be replaced with satisfactory material; and payment will be made in conformance with the CHANGES clause of the CONTRACT CLAUSES. Satisfactory material removed below the depths indicated, without specific direction of the Contracting Officer, shall be replaced, at no additional cost to the Government, with satisfactory materials to the indicated excavation grade; except that concrete footings shall be increased in thickness to the bottom of the overdepth excavations and over-break in rock excavation. Satisfactory material shall be placed and compacted as specified in Paragraph FILLING AND BACKFILLING. Determination of elevations and measurements of approved overdepth excavation of unsatisfactory material below grades indicated shall be done under the direction of the Contracting Officer.

3.4 DRAINAGE AND DEWATERING

3.4.1 Drainage

Surface water shall be directed away from excavation and construction sites to prevent erosion and undermining of foundations. Diversion ditches, dikes and grading shall be provided and maintained as necessary during construction. Excavated slopes and backfill surfaces shall be protected to prevent erosion and sloughing. Excavation shall be performed so that the site, the area immediately surrounding the site, and the area affecting operations at the site shall be continually and effectively drained.

3.4.2 Dewatering

See Section 01000 GENERAL for dewatering requirements.

Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. French drains, sumps, ditches or trenches will not be permitted within 3 feet of the foundation of any structure, except with specific written approval, and after specific contractual provisions for restoration of the foundation area have been made. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the insitu material. While the excavation is

open, the water level shall be maintained continuously, at least 2 feet below the working level.

3.5 SHORING

See Section 01000 GENERAL for dewatering requirements.

Shoring, including sheet piling, shall be furnished and installed as necessary to protect workmen, banks, adjacent paving, structures, and utilities. Shoring, bracing, and sheeting shall be removed as excavations are backfilled, in a manner to prevent caving.

3.6 CLASSIFICATION OF EXCAVATION

Excavation will be unclassified regardless of the nature of material encountered.

3.7 BORROW

Where satisfactory materials are not available in sufficient quantity from required excavations, approved materials shall be obtained as specified in Section 02300 EARTHWORK.

3.8 EXCAVATED MATERIALS

Satisfactory excavated material required for fill or backfill shall be placed in the proper section of the permanent work required under this section or shall be separately stockpiled if it cannot be readily placed. Satisfactory material in excess of that required for the permanent work and all unsatisfactory material shall be disposed of as specified in Section 02300 EARTHWORK.

3.9 FINAL GRADE OF SURFACES TO SUPPORT CONCRETE

Excavation to final grade shall not be made until just before concrete is to be placed. Approximately level surfaces shall be roughened, and sloped surfaces shall be cut as indicated into rough steps or benches to provide a satisfactory bond. Shales shall be protected from slaking and all surfaces shall be protected from erosion resulting from ponding or flow of water.

3.10 SUBGRADE PREPARATION

Unsatisfactory material in surfaces to receive fill or in excavated areas shall be removed and replaced with satisfactory materials as directed by the Contracting Officer. The surface shall be scarified to a depth of 6 inches before the fill is started. Sloped surfaces steeper than 1 vertical to 4 horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When subgrades are less than the specified density, the ground surface shall be broken up to a minimum depth of 6 inches, pulverized, and compacted to the specified density. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches and compacted as specified for the adjacent fill. Material shall not be placed on surfaces that are muddy, frozen, or contain

frost. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil being compacted. Material shall be moistened or aerated as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used. Minimum subgrade density shall be as specified in Paragraph FILLING AND BACKFILLING.

3.11 FILLING AND BACKFILLING

Satisfactory materials shall be used in bringing fills and backfills to the lines and grades indicated and for replacing unsatisfactory materials. Satisfactory materials shall be placed in horizontal layers not exceeding 8 inches in loose thickness, or 6 inches when hand-operated compactors are used. After placing, each layer shall be plowed, disked, or otherwise broken up, moistened or aerated as necessary, thoroughly mixed and compacted as specified. Backfilling shall not begin until construction below finish grade has been approved, forms removed, and the excavation cleaned of trash and debris. Backfill shall be brought to indicated finish grade. Backfill shall not be placed in wet or frozen areas. Heavy equipment for spreading and compacting backfill shall not be operated closer to foundation or retaining walls than a distance equal to the height of backfill above the top of footing; the area remaining shall be compacted in layers not more than 4 inches in compacted thickness with power-driven hand tampers suitable for the material being compacted. Backfill shall not be placed against foundation walls prior to 7 days after completion of the walls. As far as practicable, backfill shall be brought up evenly on each side of the wall and sloped to drain away from the wall. Each layer of fill and backfill shall be compacted to not less than the percentage of maximum density specified below:

	Percent Laboratory maximum density	
	Cohesive material	Cohesionless material
<u>Fill, embankment, and backfill</u>		
Under structures, paved areas, around footings, and in trenches	100	100
Nonfrost susceptible materials		95
<u>Subgrade</u>		
Under building slabs, steps, and paved areas, top 12 inches	100	100

Approved compacted subgrades that are disturbed by the Contractor's operations or adverse weather shall be scarified and compacted as specified herein before to the required density prior to further construction thereon. Recompaction over underground utilities and heating lines shall be by hand tamping.

3.12 TESTING

Testing shall be the responsibility of the Contractor and shall be performed at no additional cost to the Government. Testing shall be performed in accordance with Section 1451 CONTRACTOR QUALITY CONTROL.

3.12.1 In-Place Densities

In-place density and moisture content test results shall be included with the Contractor's daily construction quality control reports.

3.12.1.1 In-Place Density of Subgrades

Not less than one test per 500 square feet per lift or fraction thereof as determined by the foundation area of each structure.

3.12.1.2 In-Place Density of Fills and Backfills

Not less than 1 test for each 2 vertical feet of fill per 100 linear feet or fraction thereof.

3.12.2 Optimum Moisture and Laboratory Maximum Density

Tests shall be made for each type material or source of material, including borrow material to determine the optimum moisture and laboratory maximum density values. One representative test per source of fill and backfill, or when any change in material occurs which may affect the optimum moisture content or laboratory maximum density will be made.

3.13 GRADING

Areas within 5 feet of each building and structure line shall be constructed true-to-grade, shaped to drain, and shall be maintained free of trash and debris.

3.14 TOPSOIL AND SEEDING

Placement of topsoil and seeding is specified in Section 02920 SEEDING, SODDING, AND TOPSOIL.

3.15 PROTECTION

Settlement or washing that occurs in graded, topsoiled, or backfilled areas prior to acceptance of the work, shall be repaired and grades reestablished to the required elevations and slopes.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02316

EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITY SYSTEMS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 MEASUREMENT AND PAYMENT
- 1.3 RELATED WORK OF OTHER SECTIONS
- 1.4 DEFINITIONS

PART 2 PRODUCTS

- 2.1 MATERIALS
 - 2.1.1 Unyielding Material
 - 2.1.2 Unstable Material
 - 2.1.3 Coarse Filter Aggregate
- 2.2 PLASTIC MARKING TAPE

PART 3 EXECUTION

- 3.1 EXCAVATION
 - 3.1.1 Trench Excavation
 - 3.1.1.1 Bottom Preparation
 - 3.1.1.2 Unyielding Material
 - 3.1.1.3 Unstable Material
 - 3.1.1.4 Excavation for Appurtenances
 - 3.1.2 Stockpiles
- 3.2 BACKFILLING AND COMPACTION
 - 3.2.1 Levees
 - 3.2.2 Bedding and Initial Backfill
 - 3.2.3 Backfill for Appurtenances
- 3.3 SPECIAL REQUIREMENTS
 - 3.3.1 Plastic Marking Tape

-- End of Section Table of Contents --

SECTION 02316

EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITY SYSTEMS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ENGINEERING MANUALS (EM)

EM 385-1-1 (1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION(OSHA)

29 CFR 1926 Subpart P, Excavations

1.2 MEASUREMENT AND PAYMENT

Except as provided for below, the work of this section will not be measured for payment. The Contractor shall include compensation for excavating, trenching and backfilling in the most applicable contract line items in the bidding schedule.

1.3 RELATED WORK OF OTHER SECTIONS

Dewatering is covered in Section 01000 GENERAL. Material definitions, backfill compaction and testing requirements are covered in Section 02300 EARTHWORK.

1.4 DEFINITIONS

Reference to pipes shall include conduits, cables, or other utility systems. Appurtenant structures include manholes, catch basins, inlets, outlets, energy dissipators, or similar structures.

PART 2 PRODUCTS

2.1 MATERIALS

In addition to the definitions below, material definitions shall be as specified in Section 02300 EARTHWORK.

2.1.1 Unyielding Material

Unyielding material shall consist of rock and gravelly soils with stones greater than 3 inches in any dimension or as defined by the pipe manufacturer, whichever is smaller.

2.1.2 Unstable Material

Unstable material shall consist of materials too soft and/or compressible to properly support the pipe or appurtenant structure.

2.1.3 Coarse Filter Aggregate

Coarse filter aggregate shall meet the requirements of Mn/DOT 3149 and shall be a free draining mineral product, excluding crushed carbonate quarry rock, crushed concrete, and salvaged bituminous mixture. At least 50 percent of the material, by weight, retained on the Number 4 sieve shall have one or more crushed faces.

2.2 PLASTIC MARKING TAPE

Plastic marking tape shall be acid and alkali-resistant polyethylene film, 6 inches wide with minimum thickness of 0.004 inch. Tape shall have a minimum strength of 1750 psi lengthwise and 1500 psi crosswise. The tape shall be manufactured with integral wires, foil backing or other means to enable detection by a metal detector when the tape is buried up to 3 feet deep. The tape shall be of a type specifically manufactured for marking and locating underground utilities. The metallic core of the tape shall be encased in a protective jacket or provided with other means to protect it from corrosion. Tape color shall be as specified in TABLE 1 and shall bear a continuous printed inscription describing the specific utility.

TABLE 1. Tape Color

Red:	Electric
Yellow:	Gas, Oil, Dangerous Materials
Orange:	Telephone, Telegraph, Television, Police, and Fire Communications
Blue:	Water Systems
Green:	Sewer Systems

PART 3 EXECUTION

3.1 EXCAVATION

Unless otherwise indicated, trench excavation shall be by open cut except that sections may be jacked or bored if the utility can be safely and properly installed and ground loss can be properly controlled. Directional drilling should be used for the HDPE force main south of Highway 210. All excavation shall be constructed in accordance with the Safety and Health Requirements Manual (EM 385-1-1) and OSHA Standards. Allowable trench widths, depths, side slopes, sheet and bracing requirements, and other considerations are given in the OSHA Standard; and an abbreviated version is given in the Safety and Health Requirements Manual.

3.1.1 Trench Excavation

Excavation shall be performed to the lines and grades indicated. During excavation, material satisfactory for backfilling shall be stockpiled in a neat and orderly manner at a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or caving. Topsoil shall be stockpiled separately from suitable backfill material. Grading shall be done as may be necessary to prevent surface water from flowing into the excavation, and any water accumulating therein shall be removed to maintain the stability of the bottom and sides of the excavation. Unauthorized over excavation shall be backfilled at no additional cost to the Government.

3.1.1.1 Bottom Preparation

The bottoms of trenches shall be accurately graded to provide uniform bearing and support for the bottom quadrant of each section of the pipe. Pipe shall rest on undisturbed or properly placed and compacted soil along its entire length. Bell holes shall be excavated to the necessary size at each joint or coupling to eliminate point bearing. Stones of 3 inches or greater in any dimension, or as recommended by the pipe manufacturer, whichever is smaller, shall be removed to avoid point bearing.

3.1.1.2 Unyielding Material

Where unyielding material is encountered in the bottom of the trench, such material shall be removed 8 inches below the required grade and replaced with select granular fill, except as provided below.

For levees or dikes, the replaced fill shall meet the requirements for the zone where it is located. Use of material more pervious than surrounding soils is not acceptable.

3.1.1.3 Unstable Material

Where wet, soft, unsuitable or otherwise unstable soil incapable of properly supporting pipe is encountered in the bottom of a trench or excavation, the Contractor shall immediately contact the Contracting Officer prior to proceeding with the associated work. When removal of unstable material is required due to inadequate shoring and sheeting, water removal, control of ground water or other similar operations, such unstable material shall be excavated and replaced with satisfactory material as directed at no additional cost to the Government.

3.1.1.4 Excavation for Appurtenances

Excavation for appurtenances shall be of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Removal of unstable material shall be as specified above. When concrete or masonry is to be placed in an excavated area, special care shall be taken not to disturb the bottom of the excavation. Excavation to the final grade level shall not be made until just before the concrete or masonry is to be placed.

3.1.2 Stockpiles

Stockpiles of satisfactory material shall be placed and graded as specified. Stockpiles shall be kept in a neat and well drained condition, giving due consideration to drainage at all times. The ground surface at stockpile locations shall be cleared and grubbed. Excavated satisfactory and unsatisfactory materials shall be separately stockpiled. Stockpiles of satisfactory materials shall be protected from contamination which may destroy the quality and fitness of the stockpiled material. If the Contractor fails to protect the stockpiles, and any material becomes unsatisfactory, such material shall be removed and replaced with satisfactory material from approved sources at no additional cost to the Government.

3.2 BACKFILLING AND COMPACTION

Backfill shall consist of satisfactory material meeting the requirements shown and specified. Compaction and testing requirements for backfill shall be as stated in Section 02300.

3.2.1 Levees

Where pipes are located within the right of way of levees or dikes, all fill materials shall meet the type and classification for the fill zone where the trench is located. The portion of the trench in native soils shall be backfilled with the excavated material that matches the surrounding soils.

3.2.2 Bedding and Initial Backfill

Bedding shall be of the type and thickness shown. Initial backfill material shall be placed and compacted with manual tampers to a height above the pipe necessary to prevent damage, but not less than one foot. The backfill shall be brought up evenly on both sides of the pipe for the full length of the pipe. Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe.

3.2.3 Backfill for Appurtenances

After the structure has been constructed and the concrete has been allowed to cure for 7 days, backfill shall be placed in such a manner that the structure will not be damaged by the shock of falling earth. The backfill material shall be deposited and compacted as specified for final backfill, and shall be brought up evenly on all sides of the structure to prevent eccentric loading and excessive stress.

3.3 SPECIAL REQUIREMENTS

3.3.1 Plastic Marking Tape

Warning tapes shall be installed directly above the pipe, at a depth of 18 inches below finished grade unless otherwise shown.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02370

SOIL SURFACE EROSION CONTROL

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 DESCRIPTION OF WORK
- 1.3 SUBMITTALS
- 1.4 DELIVERY, INSPECTION, STORAGE, AND HANDLING
- 1.5 SUBSTITUTIONS
- 1.6 INSTALLER'S QUALIFICATION
- 1.7 TIME LIMITATIONS
- 1.8 WARRANTY

PART 2 PRODUCTS

- 2.1 MULCH
 - 2.1.1 Straw
 - 2.1.2 Hay
 - 2.1.3 Wood Cellulose Fiber
 - 2.1.4 Paper Fiber
 - 2.1.5 Shredded Bark
 - 2.1.6 Wood Chips and Ground Bark
 - 2.1.7 Coir
 - 2.1.8 Mulch Control Netting
 - 2.1.9 Dye
- 2.2 GEOTEXTILE FABRICS
- 2.3 GRAVEL
- 2.4 WATER

PART 3 EXECUTION

- 3.1 CONDITIONS
 - 3.1.1 Finished Grade
- 3.2 SITE PREPARATION
 - 3.2.1 Soil Test
 - 3.2.2 Layout
 - 3.2.3 Protecting Existing Vegetation
 - 3.2.4 Obstructions Below Ground
- 3.3 INSTALLATION
 - 3.3.1 Seeding
 - 3.3.2 Mulch Installation
 - 3.3.3 Mulch Control Netting
 - 3.3.4 Mechanical Anchor

- 3.3.5 Wood Cellulose Fiber, Paper Fiber, and Recycled Paper
- 3.4 CLEAN-UP
- 3.5 WATERING SEED
- 3.6 MAINTENANCE RECORD
 - 3.6.1 Maintenance
 - 3.6.1.1 Maintenance Instructions
 - 3.6.1.2 Patching and Replacement
- 3.7 SATISFACTORY STAND OF GRASS PLANTS

-- End of Section Table of Contents --

SECTION 02370

SOIL SURFACE EROSION CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. DEPARTMENT OF AGRICULTURE (USDA)

AMS Seed Act	(1995) Federal Seed Act Regulations Part 201
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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) (ASTM)

ASTM C 39	(1996) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 42	(1999) Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C 140	(1999b) Sampling and Testing Concrete Masonry Units
ASTM D 648	(1998c) Deflection Temperature of Plastics Under Flexural Load
ASTM D 698	(1998) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft.(600kN-m/cu. m))
ASTM D 977	(1998) Emulsified Asphalt
ASTM D 1248	(1998) Polyethylene Plastics Molding and Extrusion Materials
ASTM D 1560	(1992) Resistance to Deformation and Cohesive of Bituminous Mixtures by Means of Hveem Apparatus
ASTM D 1682	Tensile Strength and % Strength Retention of material after 1000 hours of exposure in Xenon Arc Weatherometer

ASTM D 1777	(1996) Thickness of Textile Materials
ASTM D 2028	(1976; R 1997) Cutback Asphalt (Rapid-Curing Type)
ASTM D 2844	(1994) Resistance R-Value and Expansion Pressure of Compacted Soils
ASTM D 3776	(1996) Mass per Unit Area (Weight) of Fabric
ASTM D 3787	(1989) Burst Strength of Knitted Goods: Constant-Rate-of-Traverse (CRT), Ball Burst Test
ASTM D 3884	(1992) Test Method for Abrasion Resistance of Textile Fabrics (Rotary Platform, Double Head Method)
ASTM D 4355	(1992) Deterioration of Geotextiles From Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
ASTM D 4491	(1999) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoidal Tearing Strength of Geotextiles
ASTM D 4595	(1986; R 1994) Tensile Properties of Geotextiles by the Wide-Width Strip Method
ASTM D 4632	(1991; R 1996) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1999) Determining Apparent Opening Size of a Geotextile
ASTM D 4833	(1998; R 1996el) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4972	(1995a) pH of Soils
ASTM D 5035	(1995) Breaking Force and Elongation of Textile Fabrics (Strip Method)
ASTM D 5268	(1996) Topsoil Used for Landscaping Purposes

1.2 DESCRIPTION OF WORK

The work shall consist of furnishing and installing soil surface erosion

control materials, including fine grading, blanketing, stapling, mulching and miscellaneous related work, within project limits and in areas outside the project limits where the soil surface is disturbed from work under this contract at the designated locations. This work shall include all necessary materials, labor, supervision and equipment for installation of a complete system. This section shall be coordinated with the requirements of Section 02300 EARTHWORK and Section 02920 SEEDING, SODDING, AND TOPSOIL.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Layout; G, COR
Erosion Control; G, COR

Scale drawings defining areas to receive recommended materials as required by federal, state or local regulations.

Seed Establishment Period; G, COR

Calendar time period for the seed establishment period. When there is more than one seed establishment period, the boundaries of the seeded area covered for each period shall be described.

Maintenance Record;

Record of maintenance work performed, of measurements and findings for product failure, recommendations for repair, and products replaced.

SD-03 Product Data

Geosynthetic and synthetic binding material; G, AE

Hydraulic Mulch; G, AEAE

Geotextile Fabrics; G, AE

Manufacturer's literature including physical characteristics, application and installation instructions.

Equipment; G, COR

A listing of equipment to be used for the application of erosion control materials.

Finished Grade; G, COR

Erosion Control Blankets; G, COR

Condition of finish grade status prior to installation; location of underground utilities and facilities.

SD-04 Samples

Materials; G, COR

- a. Geosynthetic and synthetic binding material; 1 quart.
- b. Standard mulch; 2 pounds.
- c. Hydraulic mulch; 2 pounds.
- d. Geotextile fabrics; 6 inch square.
- e. Erosion control blankets; 6 inch square.

SD-06 Test Reports

Geosynthetic Binders; G, COR
Hydraulic Mulch; G, COR
Geotextile Fabrics; G, COR
Erosion Control Blankets; G, COR

Certified reports of inspections and laboratory tests, prepared by an independent testing agency, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used and compliance with recognized test standards shall be described.

Sand; G, COR
Gravel; G, COR

Sieve test results. Sand shall be uniformly graded.

SD-07 Certificates

Fill Material; G, COR
Mulch; G, COR
Hydraulic Mulch; G, COR
Geotextile Fabrics; G, COR

Prior to delivery of materials, certificates of compliance attesting that materials meet the specified requirements. Certified copies of the material certificates shall include the following:

For items listed in this section:

- a. Certification of recycled content or,
- b. Statement of recycled content.
- c. Certification of origin including the name, address and telephone number of manufacturer.

Geosynthetic Binders; G, COR

Synthetic Soil Binders; G, COR

Certification for binders showing EPA registered uses, toxicity levels, and application hazards.

Erosion Control Plan; G, COR

Construction Work Sequence Schedule; G, COR

Erosion control plan. Construction sequence schedule.

Installer's Qualification; G, COR

The installer's company name and address; training and experience and or certification.

Recycled Plastic; G, COR

Individual component and assembled unit structural integrity test; creep tolerance; deflection tolerance; and vertical load test results. The estimated percentage of recovered material content in the material and components. Life-cycle durability.

Seed; G, AE

Classification, botanical name, common name, percent pure live seed, minimum percent germination and hard seed, maximum percent weed seed content, and date tested.

Asphalt Adhesive; G, AE

Tackifier; G, AE

Composition.

Wood By-Products; G, AE

Composition, source, and particle size. Products shall be free from toxic chemicals or hazardous material.

Wood; G, COR

Certification stating that wood components were obtained from managed forests.

SD-10 Operation and Maintenance Data

Maintenance Instructions; G, COR

Instruction for year-round care of installed material. The Contractor shall include manufacturer supplied spare parts.

1.4 DELIVERY, INSPECTION, STORAGE, AND HANDLING

Materials shall be stored in designated areas and as recommended by the manufacturer protected from the elements, direct exposure, and damage.

Containers shall not be dropped from trucks. Material shall be free of defects that would void required performance or warranty. Geosynthetic binders and synthetic soil binders shall be delivered in the manufacturer's original sealed containers and stored in a secure area.

- a. Erosion control blankets and geotextile fabric shall be furnished in rolls with suitable wrapping to protect against moisture and extended ultraviolet exposure prior to placement. Erosion control blanket and geotextile fabric rolls shall be labeled to provide identification sufficient for inventory and quality control purposes.
- c. Seed shall be inspected upon arrival at the jobsite for conformity to species and quality. Seed that is wet, moldy, or bears a test date five months or older, shall be rejected.

1.5 SUBSTITUTIONS

Substitutions will not be allowed without written request and approval from the Contracting Officer.

1.6 INSTALLER'S QUALIFICATION

The installer shall be certified by the manufacturer for training and experience installing the material.

1.7 TIME LIMITATIONS

Backfilling the openings in synthetic grid systems and articulating cellular concrete block systems shall be completed a maximum 7 days after placement to protect the material from ultraviolet radiation.

1.8 WARRANTY

Erosion control material shall have a warranty for use and durable condition for project specific installations. Temporary erosion control materials shall carry a minimum eighteen month warranty. Permanent erosion control materials shall carry a minimum three year warranty.

PART 2 PRODUCTS

2.1 MULCH

Mulch shall be free from weeds, mold, and other deleterious materials. Mulch materials shall be native to the region.

2.1.1 Straw

Straw shall be stalks from oats, wheat, rye, barley, or rice, furnished in air-dry condition and with a consistency for placing with commercial mulch-blowing equipment.

2.1.2 Hay

Hay shall be native hay, sudan-grass hay, broomsedge hay, or other herbaceous mowings, furnished in an air-dry condition suitable for placing with commercial mulch-blowing equipment.

2.1.3 Wood Cellulose Fiber

Wood cellulose fiber shall not contain any growth or germination-inhibiting factors and shall be dyed an appropriate color to facilitate placement during application. Composition on air-dry weight basis: a minimum 9 to a maximum 15 percent moisture, and between a minimum 4.5 to a maximum 6.0 pH.

2.1.4 Paper Fiber

Paper fiber mulch shall be recycled newsprint that is shredded for the purpose of mulching seed.

2.1.5 Shredded Bark

Locally shredded material shall be treated to retard the growth of mold and fungus.

2.1.6 Wood Chips and Ground Bark

Locally chipped or ground material shall be treated to retard the growth of mold and fungus. Gradation: A maximum 2 inch wide by 4 inch long.

2.1.7 Coir

Coir shall be manufactured from 100 percent coconut fiber cured in fresh water for a minimum of 6 months.

2.1.8 Mulch Control Netting

Mulch control netting may be constructed of lightweight recycled plastic, cotton, or paper or organic fiber. The recycled plastic shall be a woven or nonwoven polypropylene, nylon, or polyester containing stabilizers and/or inhibitors to make the fabric resistant to deterioration from UV, and with the following properties:

- a. Minimum grab tensile strength (TF 25 #1/ASTM D 4632), 180 pounds.
- b. Minimum Puncture (TF 25 #4/ASTM D 3787), 75 psi in the weakest direction.
- c. Apparent opening sieve size of a minimum 40 and maximum 80 (U.S. Sieve Size).
- d. Minimum Trapezoidal tear strength (TF 25 #2/ASTM D 4533), 50 pounds.

2.1.9 Dye

Dye shall be a water-activated, green color. Dye shall be pre-packaged in water dissolvable packets in the hydraulic mulch.

2.2 GEOTEXTILE FABRICS

Geotextile fabrics shall meet the requirements of Section 02373 GEOTEXTILE for their intended use.

2.3 GRAVEL

Gravel shall be river run between a minimum 3/4 inches and a maximum 3 inches.

2.4 WATER

Unless otherwise directed, water shall be the responsibility of the Contractor. Water shall be potable or supplied by an existing irrigation system.

PART 3 EXECUTION

3.1 CONDITIONS

The Contractor shall submit a construction work sequence schedule, with the approved erosion control plan a minimum of 30 days prior to start of construction. The work schedule shall coordinate the timing of land disturbing activities with the provision of erosion control measures. Erosion control operations shall be performed under favorable weather conditions; when excessive moisture, frozen ground or other unsatisfactory conditions prevail, the work shall be stopped as directed. When special conditions warrant a variance to earthwork operations, a revised construction schedule shall be submitted for approval. Erosion control materials shall not be applied in adverse weather conditions which could affect their performance.

3.1.1 Finished Grade

The Contractor shall verify that finished grades are as indicated on the drawings; finish grading and compaction shall be completed in accordance with Section 02300 EARTHWORK, prior to the commencement of the work. The location of underground utilities and facilities in the area of the work shall be verified and marked. Damage to underground utilities and facilities shall be repaired at the Contractor's expense.

3.2 SITE PREPARATION

3.2.1 Soil Test

Soil shall be tested in accordance with ASTM D 5268 and ASTM D 4972 for determining the particle size and mechanical analysis. Sample collection onsite shall be random over the entire site. The test shall determine the soil particle size as compatible for the specified material.

3.2.2 Layout

Erosion control material locations may be adjusted to meet field conditions. When soil tests result in unacceptable particle sizes, a shop

drawing shall be submitted indicating the corrective measures.

3.2.3 Protecting Existing Vegetation

When there are established lawns in the work area, the turf shall be covered and/or protected or replaced after construction operations. Existing trees, shrubs, and plant beds that are to be preserved shall be barricaded along the dripline. Damage to existing trees shall be mitigated by the Contractor at no additional cost to the Government. Damage shall be assessed by a state certified arborist or other approved professional using the National Arborist Association's tree valuation guideline.

3.2.4 Obstructions Below Ground

When obstructions below ground affect the work, shop drawings showing proposed adjustments to placement of erosion control material shall be submitted for approval.

3.3 INSTALLATION

3.3.1 Seeding

When seeding is required prior to installing mulch on synthetic grid systems the Contractor shall verify that seeding will be completed in accordance with Sections 02300 EARTHWORK and 02920 SEEDING, SODDING, AND TOPSOIL.

3.3.2 Mulch Installation

Mulch shall be installed in the areas indicated. Mulch shall be applied evenly at the rate of 2 tons per acre and in accordance with Section 02920 SEEDING, SODDING, AND TOPSOIL.

3.3.3 Mulch Control Netting

Netting may be stapled over mulch according to manufacturer's recommendations.

3.3.4 Mechanical Anchor

Mechanical anchor shall be a V-type-wheel land packer; a scalloped-disk land packer designed to force mulch into the soil surface; or other suitable equipment.

3.3.5 Wood Cellulose Fiber, Paper Fiber, and Recycled Paper

Wood cellulose fiber, paper fiber, or recycled paper shall be applied as part of the hydraulic mulch operation.

3.4 CLEAN-UP

Excess material, debris, and waste materials shall be disposed offsite at an approved landfill or recycling center. Adjacent paved areas shall be cleared. Immediately upon completion of the installation in an area, the

area shall be protected against traffic or other use by erecting barricades and providing signage as required, or as directed. Signage shall be in accordance with Section 10430 EXTERIOR SIGNAGE.

3.5 WATERING SEED

Watering shall be started immediately after installing erosion control blanket type XI (revegetation mat). Water shall be applied to supplement rainfall at a sufficient rate to ensure moist soil conditions to a minimum 1 inch depth. Run-off and puddling shall be prevented. Watering trucks shall not be driven over turf areas, unless otherwise directed. Watering of other adjacent areas or plant material shall be prevented.

3.6 MAINTENANCE RECORD

A record shall be furnished describing the maintenance work performed, record of measurements and findings for product failure, recommendations for repair, and products replaced.

3.6.1 Maintenance

Maintenance shall include eradicating weeds; protecting embankments and ditches from surface erosion; maintaining the performance of the erosion control materials and mulch; protecting installed areas from traffic.

3.6.1.1 Maintenance Instructions

Written instructions containing drawings and other necessary information shall be furnished, describing the care of the installed material; including, when and where maintenance should occur, and the procedures for material replacement.

3.6.1.2 Patching and Replacement

Unless otherwise directed, material shall be placed, seamed or patched as recommended by the manufacturer. Material not meeting the required performance as a result of placement, seaming or patching shall be removed from the site. The Contractor shall replace the unacceptable material at no additional cost to the Government.

3.7 SATISFACTORY STAND OF GRASS PLANTS

When erosion control blanket type XI (revegetation mat) is installed, the grass plants shall be evaluated for species and health when the grass plants are a minimum 1 inch high. A satisfactory stand of grass plants from the revegetation mat area shall be a minimum 10 grass plants per square foot. The total bare spots shall not exceed 2 percent of the total revegetation mat area.

-- End of Document --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02373

GEOTEXTILE

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DELIVERY, STORAGE AND HANDLING
 - 1.3.1 Delivery
 - 1.3.2 Storage
 - 1.3.3 Handling

PART 2 PRODUCTS

- 2.1 RAW MATERIALS
 - 2.1.1 Geotextile
 - 2.1.1.1 Material Categories
 - 2.1.1.2 Product Information
 - 2.1.1.3 Physical Properties
 - 2.1.2 Thread
- 2.2 MANUFACTURING QUALITY CONTROL SAMPLING AND TESTING

PART 3 EXECUTION

- 3.1 QUALITY ASSURANCE SAMPLES AND TESTS
 - 3.1.1 Quality Assurance Samples
 - 3.1.2 Quality Assurance Tests
- 3.2 INSTALLATION
 - 3.2.1 Subgrade Preparation
 - 3.2.2 Placement
- 3.3 SEAMS
 - 3.3.1 Overlap Seams
 - 3.3.2 Sewn Seams
- 3.4 PROTECTION
- 3.5 REPAIRS
- 3.6 PENETRATIONS
- 3.7 COVERING

-- End of Section Table of Contents --

SECTION 02373

GEOTEXTILE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of the specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 4354	(1999) Sampling of Geosynthetics for Testing
ASTM D 4355	(1999) Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
ASTM D 4491	(1999a) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1997) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1999a) Determining Apparent Opening Size of a Geotextile
ASTM D 4759	(1988; R 1996) Determining the Specification Conformance of Geosynthetics
ASTM D 4833	(2000) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873	(2001) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

MINNESOTA DEPARTMENT OF TRANSPORTATION (Mn/DOT)

Mn/DOT 3733	Geotextiles
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1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Thread; G, AE

A minimum of 7 days prior to scheduled use, proposed thread type for sewn seams along with data sheets showing the physical properties of the thread.

Manufacturing Quality Control Manual Sampling and Testing; G, COR

A minimum of 7 days prior to scheduled use, manufacturer's quality control manual.

SD-04 Samples

Quality Assurance Samples and Tests; G, COR

Samples for quality assurance testing; 7 days shall be allotted in the schedule to allow for testing.

SD-07 Certificates

Geotextile; G, COR

A minimum of 7 days prior to scheduled use, manufacturer's certificate of compliance stating that the geotextile meets the requirements of this section. For needle punched geotextiles, the manufacturer shall also certify that the geotextile has been continuously inspected using permanent on-line full-width metal detectors and does not contain any needles which could damage other geosynthetic layers. The certificate of compliance shall be attested to by a person having legal authority to bind the geotextile manufacturer.

1.3 DELIVERY, STORAGE AND HANDLING

Delivery, storage, and handling of geotextile shall be in accordance with ASTM D 4873.

1.3.1 Delivery

The Contracting Officer shall be notified a minimum of 24 hours prior to delivery and unloading of geotextile rolls. Rolls shall be packaged in an opaque, waterproof, protective plastic wrapping. The plastic wrapping shall not be removed until deployment. If quality assurance samples are collected, rolls shall be immediately rewrapped with the plastic wrapping. Geotextile or plastic wrapping damaged during storage or handling shall be repaired or replaced, as directed. Each roll shall be labeled with the

manufacturer's name, geotextile type, roll number, roll dimensions (length, width, gross weight), and date manufactured.

1.3.2 Storage

Rolls of geotextile shall be protected from construction equipment, chemicals, sparks and flames, temperatures in excess of 160 degrees F, or any other environmental condition that may damage the physical properties of the geotextile. To protect geotextile from becoming saturated, rolls shall either be elevated off the ground or placed on a sacrificial sheet of plastic in an area where water will not accumulate.

1.3.3 Handling

Geotextile rolls shall be handled and unloaded with load carrying straps, a fork lift with a stinger bar, or an axial bar assembly. Rolls shall not be dragged along the ground, lifted by one end, or dropped to the ground.

PART 2 PRODUCTS

2.1 RAW MATERIALS

2.1.1 Geotextile

2.1.1.1 Material Categories

This Specification covers geotextiles (permeable fabrics) for use in a variety of typical construction applications. Types of geotextile are classified by typical use, in accordance with Mn/DOT 3733, as follows:

Type I - For use in wrapping subsurface drain pipe or for other specified drainage applications.

Type II - For use in wrapping joints of concrete pipe culvert and as a cover over drain field aggregate.

Type III - Not used.

Type IV - For use under R8 and R12 random riprap, handplaced riprap, and quarry-run riprap.

Type V - For use in separating materials (stabilization).

Type VI - Not used.

2.1.1.2 Product Information

Geotextile shall be a woven, nonwoven, or knit fabric of polymeric filaments or yarns such as polypropylene, polyethylene, polyester, or polyamide formed into a stable network such that the filaments/yarns retain their relative position to each other. Knit fabric will only be allowed for use as perforated pipe wrap. The geotextile shall be inert to commonly encountered chemicals and shall be free of any chemical treatment or coating that might significantly reduce porosity or

permeability.

Geotextile shall be uniform in texture, thickness and appearance, and be free of defects, flaws or tears that would significantly alter its strength or filtering properties. All authorized repairs shall be completed to the satisfaction of the Contracting Officer.

All rolls of geotextile or geotextile-wrapped perforated pipe shall be delivered to the Project with an opaque plastic covering to prevent degradation due to ultraviolet rays of the sun or contamination with mud, dirt, dust or debris. Rolled geotextile shall be identified by manufacturer, product name, and roll number, both on the outside wrap and inside the core, as well as other requirements of ASTM D 4873 (Identification, Storage, and Handling). Geotextile shall not be left exposed to the sun for a period in excess of 7 days without being covered by the appropriate protective soil or rock layer. The Contracting Officer may require replacement of any geotextile exposed to the sun for periods longer than 7 days or if the geotextile is contaminated with foreign matter.

When geotextiles are used for stabilization (Type V) or earth reinforcement (Type VI), the Contractor shall produce sewn seams meeting the strength requirements of Mn/DOT 3733, Table 3733-1.

2.1.1.3 Physical Properties

Geotextile materials shall conform to the requirements of Mn/DOT 3733 for physical properties.

2.1.2 Thread

Sewn seams shall be constructed with high-strength polyester, nylon, or other approved thread type. Thread shall have ultraviolet light stability equivalent to the geotextile and the color shall contrast with the geotextile.

2.2 MANUFACTURING QUALITY CONTROL SAMPLING AND TESTING

The Manufacturer shall be responsible for establishing and maintaining a quality control program to assure compliance with the requirements of the specification. Documentation describing the quality control program shall be made available upon request. Manufacturing quality control sampling and testing shall be performed in accordance with the manufacturer's approved quality control manual. As a minimum, geotextiles shall be randomly sampled for testing in accordance with ASTM D 4354, Procedure A. Acceptance of geotextile shall be in accordance with ASTM D 4759. Tests not meeting the specified requirements shall result in the rejection of applicable rolls.

PART 3 EXECUTION

3.1 QUALITY ASSURANCE SAMPLES AND TESTS

3.1.1 Quality Assurance Samples

The Contractor shall provide assistance to the Contracting Officer in the collection of quality assurance samples. Samples shall be collected upon delivery to the site for quality assurance testing at the request of the Contracting Officer. Samples shall be identified with a waterproof marker by manufacturer's name, product identification, lot number, roll number, and machine direction. The date and a unique sample number shall also be noted on the sample. The outer layer of the geotextile roll shall be discarded prior to sampling a roll. Samples shall then be collected by cutting the full-width of the geotextile sheet a minimum of 3 feet long in the machine direction. Rolls which are sampled shall be immediately resealed in their protective covering.

3.1.2 Quality Assurance Tests

The Contractor shall provide quality assurance samples to an Independent Laboratory. Samples will be tested to verify that geotextile meets the requirements specified in Mn/DOT 3733, Table 3733-1. Test method ASTM D 4355 shall not be performed on the collected samples. Geotextile product acceptance shall be based on ASTM D 4759. Tests not meeting the specified requirements shall result in the rejection of applicable rolls.

3.2 INSTALLATION

3.2.1 Subgrade Preparation

The surface underlying the geotextile shall be smooth and free of ruts or protrusions which could damage the geotextile. Subgrade materials and compaction requirements shall be in accordance with Section 02300 EARTHWORK.

3.2.2 Placement

The Contractor shall notify the Contracting Officer a minimum of 24 hours prior to installation of geotextile. Geotextile rolls which are damaged or contain imperfections shall be repaired or replaced as directed. The geotextile shall be laid flat and smooth so that it is in direct contact with the subgrade. The geotextile shall also be free of tensile stresses, folds, and wrinkles. On slopes steeper than 10 horizontal on 1 vertical, the geotextile shall be laid with the machine direction of the fabric parallel to the slope direction.

3.3 SEAMS

3.3.1 Overlap Seams

Geotextile panels shall be continuously overlapped a minimum of 12 inches at all longitudinal and transverse joints. Where seams must be oriented across the slope, the upper panel shall be lapped over the lower panel. In flow areas, the upstream panels should overlap the downstream panels. If approved, sewn seams may be used instead of overlapped seams.

3.3.2 Sewn Seams

Factory and field seams shall be continuously sewn on all slopes steeper

than 1 vertical on 3.5 horizontal. The stitch type used shall be a 401 locking chain stitch or as recommended by the manufacturer. Quality Assurance seam samples shall be provided to the Government at the request of the Contracting Officer. Seam strength shall meet the minimum requirements specified in Mn/DOT 3733, Table 3733-1. The thread at the end of each seam run shall be tied off to prevent unraveling. Skipped stitches or discontinuities shall be sewn with an extra line of stitching with a minimum of 18 inches of overlap.

3.4 PROTECTION

The geotextile shall be protected during installation from clogging, tears, and other damage. Damaged geotextile shall be repaired or replaced as directed. Adequate ballast (e.g. sand bags) shall be used to prevent uplift by wind. The geotextile shall not be left uncovered for more than 14 days after installation.

3.5 REPAIRS

Torn or damaged geotextile shall be repaired. Clogged areas of geotextile shall be removed. Repairs shall be performed by placing a patch of the same type of geotextile over the damaged area. The patch shall extend a minimum of 12 inches beyond the edge of the damaged area. Patches shall be continuously fastened using approved methods. The machine direction of the patch shall be aligned with the machine direction of the geotextile being repaired. Geotextile rolls which cannot be repaired shall be removed and replaced. Repairs shall be performed at no additional cost to the Government

3.6 PENETRATIONS

Engineered penetrations of the geotextile shall be constructed by methods recommended by the geotextile manufacturer.

3.7 COVERING

Geotextile shall not be covered prior to inspection and approval by the Contracting Officer. Cover soil shall be placed in a manner that prevents soil from entering the geotextile overlap zone, prevents tensile stress from being mobilized in the geotextile, and prevents wrinkles from folding over onto themselves. On side slopes, soil backfill shall be placed from the bottom of the slope upward. Cover soil shall not be dropped onto the geotextile from a height greater than 3 feet. No equipment shall be operated directly on top of the geotextile without approval of the Contracting Officer. Equipment with ground pressures less than 7 psi shall be used to place the first lift over the geotextile. A minimum of 12 inches of soil shall be maintained between full-scale construction equipment and the geotextile. Cover soil material type, compaction, and testing requirements are described in Section 02300 EARTHWORK. Equipment placing cover soil shall not stop abruptly, make sharp turns, spin their wheels, or travel at speeds exceeding 3.5 mph.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02388

STONE PROTECTION (RIPRAP)

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS

PART 2 PRODUCTS

- 2.1 STONE SOURCES AND EVALUATION
 - 2.1.1 Alternate Sources
 - 2.1.2 Acceptance of Materials
- 2.2 RIPRAP
 - 2.2.1 General
 - 2.2.2 Production
- 2.3 BEDDING MATERIAL
- 2.4 GEOTEXTILE
- 2.5 SOURCE QUALITY CONTROL
 - 2.5.1 Sampling Requirements
 - 2.5.2 Riprap Gradation Testing
 - 2.5.2.1 Riprap Test Method A
 - 2.5.2.2 Riprap Test Method B
 - 2.5.3 Bedding Gradation Testing
- 2.6 STOCKPILES

PART 3 EXECUTION

- 3.1 CONSTRUCTION TOLERANCES
- 3.2 FOUNDATION PREPARATION
- 3.3 PLACEMENT OF BEDDING LAYERS
- 3.4 PLACEMENT OF GEOTEXTILE
 - 3.4.1 Covering Geotextile
- 3.5 PLACEMENT OF RIPRAP
 - 3.5.1 Layer Requirements
 - 3.5.2 Construction Methods
 - 3.5.3 Riprap Placement on Geotextile
 - 3.5.4 Riprap Placement in Water
- 3.6 MAINTENANCE
- 3.7 CONTRACTOR QUALITY CONTROL

-- End of Section Table of Contents --

SECTION 02388

STONE PROTECTION (RIPRAP)

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
(AASHTO)

AASHTO M 288 (1996) Geotextile Specification for
Highway Applications

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 33 (1999) Concrete Aggregates

ASTM C 127 (1988; R 1993) Specific Gravity and
Absorption of Coarse Aggregate

ASTM C 136 (1996a) Sieve Analysis of Fine and Coarse
Aggregates

ASTM C 295 (1998) Petrographic Examination of
Aggregates for Concrete

ASTM D 75 (1987; R 1997) Sampling Aggregates

ASTM D 4791 (1995) Flat Particles, Elongated
Particles, or Flat and Elongated Particles
in Coarse Aggregate

ASTM D 4992 (1994) Evaluation of Rock to be Used for
Erosion Control

ASTM D 5312 (1992; R 1997) Evaluation of Durability of
Rock for Erosion Control Under Freezing
and Thawing Conditions

CORPS OF ENGINEERS (COE)

EM 1110-2-2302 (1990) Construction with Large Stone

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

NIST HB 44 (1997) NIST Handbook 44: Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices

Minnesota Department of Transportation (MNDOT) Standard Specifications for Construction

MNDOT 2511 (1995) Riprap

MNDOT 3733 (1995) Geotextiles

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Material Sources; G, COR

The Contractor shall designate in writing only one source or one combination of sources from which he proposes to furnish stone. The Contractor shall state in writing methods of processing and handling riprap, and shall notify the Contracting Officer when production methods are changed.

SD-03 Product Data

Geotextile Data;

Catalog cuts or technical data sheets shall be submitted for the geotextile showing that the product meets the specifications.

SD-06 Test Reports

Gradation Test;

Gradation Test Results for riprap and aggregates. Riprap gradation testing results shall be submitted on the WORKSHEET FOR GRADATION ANALYSIS OF RIPRAP and the gradation curve (Form 4055). A blank copy of each form is included at the end of this section.

SD-07 Certificates

Certified Weight Scale Tickets;

Copies of all certified weight scale tickets shall be furnished to the Contracting Officer at a frequency as directed. The tickets do not need to be formally submitted through the submittal process.

PART 2 PRODUCTS

2.1 STONE SOURCES AND EVALUATION

Stone and aggregate materials shall be produced from the sources listed in Section 00830 ATTACHMENTS. If the Contractor proposes to furnish materials from a source not listed, the Government Geologist will make such investigations and evaluations as necessary to determine whether or not materials with acceptable durability can be produced from the proposed source. The rock supplied shall be produced from one rock formation to provide a product of uniform appearance. The Contractor shall not supply rock from various formations, or mix field stone with quarried rock, unless approved by the Contracting Officer. It is the Contractor's responsibility to determine that the stone source or combination of sources selected is capable of providing the quality, quantities and gradation needed and at the rate needed to maintain the scheduled progress of the work.

2.1.1 Alternate Sources

a. Evaluation by Site Inspection. If the Contractor proposes to furnish stone from an unlisted source, the Government will evaluate the alternate source and reply within 30 days. A quarry investigation shall be performed by a Government geologist or engineer. If the source is an undeveloped quarry or if the operation has been dormant for more than one year such that the quarry face is weathered, the Contractor shall expose fresh rock for 20 feet horizontally and for the full height of the face proposed for production, prior to the field evaluation. The Government will consider service records for stone of a similar size, placed in a similar thickness and exposed to weathering under similar conditions as are anticipated for this contract. The Government may choose to accept the source based on rock classification, geologic evaluation, and service records show that the stone is durable to the satisfaction of the Government.

b. Evaluation by Test Data. If sufficient information is not available, the Government will reconsider the alternate source if evaluation is supplemented by sampling and testing. This will require an additional 60 day evaluation period. If the Contractor wishes to pursue the alternate source, the Government will notify the Contractor of required testing and evaluation criteria. Criteria for acceptance will consider criteria in EM 1110-2-2302, but will also consider characteristics of rock found in nearby quarries. Some common test procedures that may be considered include:

Unit Weight and Absorption (ASTM C 127).
Petrographic Examination (ASTM C 295 and ASTM D 4992).
Resistance to Freezing and Thawing (ASTM D 5312).

c. Sampling and Testing. Samples from alternate sources shall be taken by a representative of the quarry under the supervision of the Contracting Officer. Information provided with the samples shall include the location and stratigraphy within the quarry from which the sample was taken. The Contractor shall ship the samples to a laboratory identified by the Contracting Officer. The Government will be responsible for testing costs associated with one quarry per project; and the Contractor shall be responsible for testing costs for additional sources.

2.1.2 Acceptance of Materials

Acceptance of a source of stone is not to be construed as acceptance of all material from that source. The right is reserved to reject materials from certain localized areas, zones, strata, or channels, when such materials are unsuitable for stone as determined by the Contracting Officer. The Contracting Officer also reserves the right to reject individual units of produced specified materials in stockpiles at the quarry, all transfer points, and at the project construction site when such materials are determined to be unsuitable.

2.2 RIPRAP

Riprap gradation shall meet the requirements for R6, R7, R8, and R12 riprap indicated on the attached FORM 4055 and gradations shown below. The stone shall be well graded within the limits specified.

Revised Standard Riprap Gradations

Riprap Gradation	R6		R7		R8		R12	
Percent Sample between weight limits								
100	85	40	140	60	205	90	690	280
50	35	20	60	30	85	45	290	140
15	20	5	30	10	40	15	150	45
5	15	2	25	5	35	8	130	25

2.2.1 General

All stone shall be durable material. Stone for riprap shall have a specific gravity between 2.55 and 2.75. Stone shall be of a suitable quality to ensure permanence in the structure and in the climate in which it is to be used. It shall be free from cracks, blast fractures, bedding, seams and other defects that would tend to increase its deterioration from natural causes. A hairline crack that is defined as being detrimental shall have a minimum width of 4 mil and shall be continuous for one-third the dimension of at least two sides of the stone. The stone shall be clean and reasonably free from soil, quarry fines, and shall contain no refuse. Any foreign material adhering to or combined with the stone as a result of stockpiling shall be removed prior to placement. The maximum aspect ratio (greatest dimension:least dimension) of any piece of stone for size ranges shall be not greater than 3:1 when measured across mutually perpendicular axis. ASTM D 4791 shall be used as a guide to perform the test.

2.2.2 Production

Riprap shall be handled and selectively loaded onto trucks in a manner to avoid segregation and provide a distribution of stone sizes consistent with the gradation band and test samples. Each truckload shall be representative of the gradation requirements.

2.3 BEDDING MATERIAL

Bedding material shall be composed of tough, durable particles, adequately free from thin, flat and elongated pieces, and shall contain no organic matter nor soft, friable particles in quantities considered objectionable by the Contracting Officer. The aggregates shall meet the quality requirements of ASTM C 33. The bedding material shall be well-graded between the limits shown. Gradation shall conform to B1 and B2 as follows:

Revised Standard Riprap Bedding Gradations in Percent Passing

Sieve Size(in)	Bedding Gradation B2	Bedding Gradation B1
6	100	
4	79-100	100
3	71-88	85-100
1.5	54-71	67-85
3/4	38-54	50-67
3/8	22-38	33-49
#4	7-22	15-32
#10	0-5	0-10
#20		0-5
Riprap	R8	R6
Type	R12	R7
Bedding Layer Thickness	9	6

2.4 GEOTEXTILE

Geotextile shall meet the requirements of Mn/DOT 3733 for the corresponding gradations.

2.5 SOURCE QUALITY CONTROL

Sampling and testing shall be performed by and at the expense of the Contractor at no additional cost to the Government. Gradation tests shall be performed by the methods and at the frequency listed below. A satisfactory gradation test shall be obtained prior to any hauling and delivery of materials. All tests, including failing tests shall be submitted. Tests performed on material which do not meet gradation and shape requirements will not be counted as part of the tests required. The Contracting Officer shall be informed immediately of test results and draft copies of test results shall be furnished at the Contracting Officers request.

2.5.1 Sampling Requirements

The Contracting Officer shall direct the time and location of sampling, unless waived. Samples shall be taken from stockpiles or loaded trucks, and not directly from conveyers or chutes.

2.5.2 Riprap Gradation Testing

- a. Notification. The Contracting Officer shall be informed 24 hours before each riprap test.
- b. Testing Frequency. At least 1 gradation test shall be performed per source per riprap type prior to delivery to the project site. Perform 1 test of each riprap type stockpiled or delivered to the project site.
- c. Sample Size. The sample shall have a minimum gross weight not less than 25 times the weight of maximum stone size allowed in the specified gradation ($25 * W_{100}$).

2.5.2.1 Riprap Test Method A

Test method A shall consist of weighing all stones larger than 5 pounds in a sample. Five to seven weight classes shall be selected within the range of stone sizes. Each stone shall be weighed and recorded on the work sheet for method A. The weight of stones shall be summed for each weight class; after which calculations and a plot of the gradation shall be completed in accordance with accepted practice for soil and aggregate gradations.

2.5.2.2 Riprap Test Method B

Test method B shall consist of separating the stones into 5 to 7 piles, ordered by size. The sample shall be separated on a clean, hard surface that is free of smaller stones that could become mixed with the sample. The stones shall be visually screened to place them into appropriate piles.

All stones shall be separated and placed into a pile before weighing. After separating, the smallest and largest rock in each pile shall be weighed and recorded. The stones shall be adjusted as necessary so that the weight classes do not overlap. After adjustment is adequate and weight classes have been established, each pile of stone shall be weighed and recorded on the work sheet for method B. Calculations and a plot of the gradation shall be completed in accordance with accepted practice for soil and aggregate gradations.

2.5.3 Bedding Gradation Testing

The bedding and filter materials shall be sampled in accordance with ASTM D 75 and tested in accordance with ASTM C 136.

- a. Testing Frequency. At least 1 gradation test shall be performed per source per bedding type prior to delivery to the project site. Perform 1 test of each bedding type stockpiled or delivered to the project site.
- b. Sample Size. Aggregate samples shall have a minimum gross weight not less than 110 pounds per inch of the maximum nominal aggregate size in the specified gradation.

2.6 STOCKPILES

Stockpiles shall be formed by a series of layers or truckload dumps, where the rock essentially remains where it is placed. Subsequent layers shall be started 10 feet from the edge of the previous layer so that the rock will not roll down the edges of the pile. Any stone which has become contaminated with soil or refuse shall not be put into the work unless the contaminating material has been removed prior to placement.

PART 3 EXECUTION

3.1 CONSTRUCTION TOLERANCES

Work shall generally meet the required elevations, slope and grade; and the outer surfaces shall be even and present a neat appearance.

a. Subgrades. Areas on which stone protection will be placed shall be graded and/or dressed to conform to cross sections shown on the contract drawings within 2 inches above or below the neat lines. The surface shall be reasonably smooth to match tolerances normally obtained by rough grading with bladed equipment. For subaqueous construction in greater than 3 feet of water, the tolerance shall be 6 inches.

b. Layer Thickness. Any layers found to be less than 80% of the specified thickness shall be corrected. This tolerance shall only be exceeded on isolated spot checks, and if the tolerance is commonly exceeded, the Contractor shall change his construction methods to improve the quality control. If it is necessary to estimate riprap quantities for changes, the volume shall be based on neat line dimensions and the plan dimension for thickness. A conversion factor of 1.5 tons/CY shall be used to determine quantity requirements, unless otherwise directed by the Contracting Officer.

c. Surface Tolerances. The finished surface tolerance above the neatline shall generally not deviate from the lines and grades shown by more than half (1/2) the average stone dimension of the gradation range. Riprap that has a rough and uneven surface shall be reworked by hand to stabilize stones that wobble and are out of tolerance, except where the Contracting Officer approves use of equipment. Rearranging of individual stones shall be required to the extent necessary to obtain a well-graded distribution of stone sizes.

3.2 FOUNDATION PREPARATION

Foundation areas shall be excavated or filled to the lines and grades shown. Filling shall be with earth similar to the adjacent material and shall be well compacted. Immediately prior to placing riprap, the prepared subgrade will be inspected by the Contracting Officer unless waived; and no material shall be placed thereon until that area has been approved.

3.3 PLACEMENT OF BEDDING LAYERS

Bedding material shall be spread uniformly on the prepared base to the lines and grades indicated and in such manner as to avoid disturbance to the subgrade. Placing by methods which tend to segregate the particle sizes or cause mixing of the separate layers will not be permitted. Placement shall begin at the bottom of the area to be covered and continue

up slope. Subsequent loads of material shall be placed against previously placed material in such a manner as to ensure a relatively homogenous mass.

Any damage to the surface of the prepared base during placing of the material shall be repaired before proceeding with the work. Compaction of bedding material will not be required, but the surface shall be finished to present an adequately even surface, free from mounds or windrows.

3.4 PLACEMENT OF GEOTEXTILE

Placement of geotextile shall be in accordance with Mn/DOT 2511 and Section 02373 GEOTEXTILES.

3.4.1 Covering Geotextile

Overlying sand and aggregate layers shall be spread uniformly to the full lift thickness on the geotextile by methods that do not tear, puncture, or reposition the fabric. Sudden braking and sharp turning shall be avoided. Tracked equipment shall not turn to prevent tracks from shearing the geotextile. Construction equipment shall not be operated directly upon the geotextile.

3.5 PLACEMENT OF RIPRAP

3.5.1 Layer Requirements

Riprap shall be placed in a manner which will produce a well-graded mass of rock with the minimum practicable percentage of voids. The large stones shall be well distributed. The finished riprap shall be free from objectionable pockets of small stones and clusters of larger stones.

3.5.2 Construction Methods

Unsegregated stone shall be placed in a systematic manner. Riprap shall be placed to its full course thickness in one operation and in such manner as to avoid displacing underlying material. Placement shall typically begin at the bottom of the area to be covered and continue up slope. Subsequent loads of material shall be placed against previously placed material in such a manner as to ensure a relatively homogenous mass. Final finish of slope shall be performed as the material is placed.

Placing riprap in layers will not be permitted. Placing riprap by dumping it into chutes, or by any method likely to cause segregation of the various sizes, shall not be permitted. Placing riprap by dumping it at the top of the slope and pushing it down the slope shall not be permitted. No equipment shall be operated directly on the completed stone protection system. Dump trucks shall be equipped with bottom hinged tailgates if rock is directly placed into position with the trucks.

3.5.3 Riprap Placement on Geotextile

Riprap shall be placed over the geotextile by methods that do not tear, puncture, or reposition the fabric. Equipment shall be operated so as to minimize the drop height of the stone without contacting and damaging the geotextile. Generally this will be about 1 foot of drop from the bucket to

the placement surface. Riprap shall be placed so that stones do not roll downhill.

3.5.4 Riprap Placement in Water

Riprap to be placed under water shall be placed in a systematic manner so as to ensure a continuous uniform layer of well-graded stone of the required thickness. Riprap to be placed under water shall be placed with a drop height less than 2 feet. Riprap shall not be cast across the surface of the water. The equipment shall be capable of reaching the placed material to monitor the water depth and surface coverage.

3.6 MAINTENANCE

The Contractor shall maintain the stone protection and underlying works until accepted by the Contracting Officer. When appropriate, the Contractor shall place stone protection in a timely manner to reduce risk of scour. Any material displaced prior to acceptance and due to the Contractor's negligence or neglect shall be replaced at the Contractor's expense.

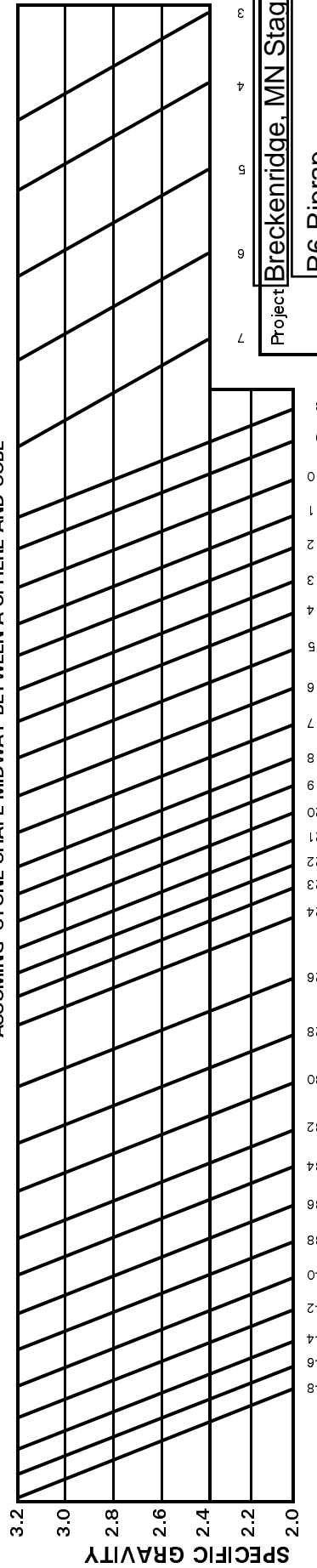
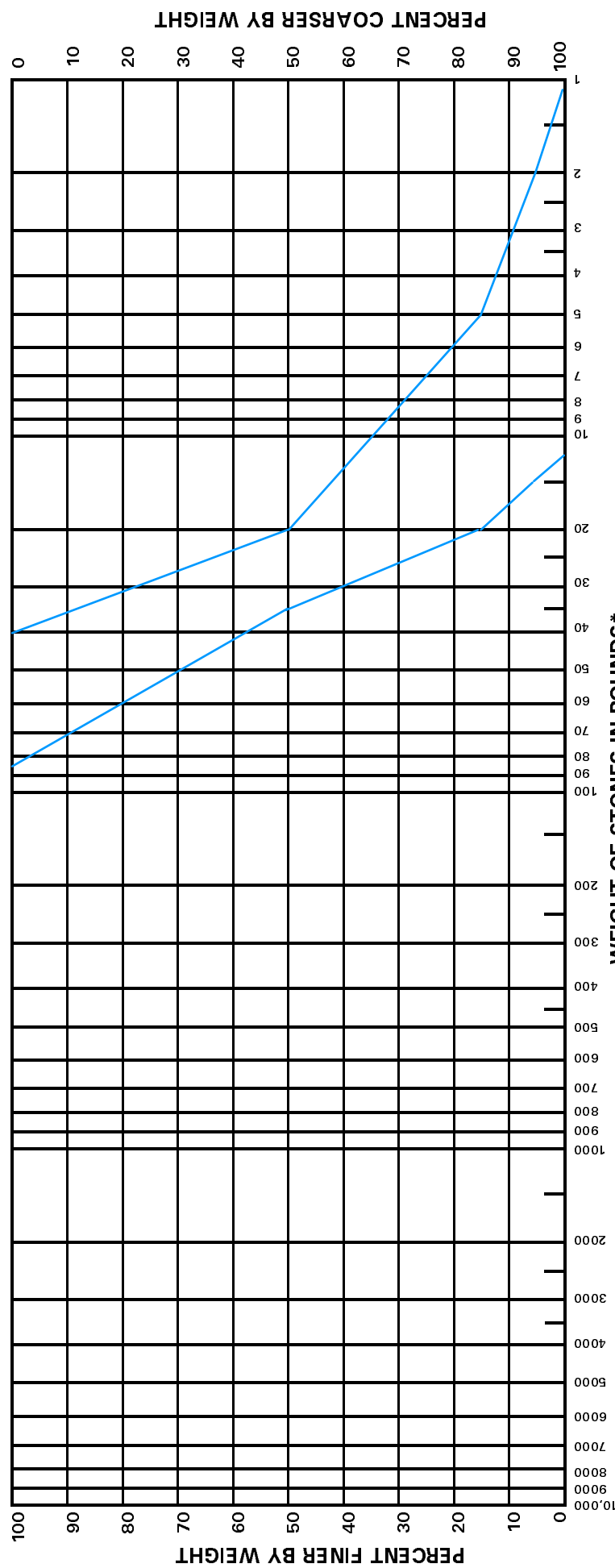
3.7 CONTRACTOR QUALITY CONTROL

The Contractor shall establish and maintain quality control for all work performed at the job site under this section to assure compliance with contract requirements. The Contractor shall maintain records of its quality control tests, inspections and corrective actions. Quality control measures shall cover all construction operations including, but not limited to, the placement of all materials to the slope and grade lines shown and in accordance with this section.

In addition to the Contractor's system to establish and maintain quality control for stone placement operations, the following information shall be recorded and promptly provided to the Contracting Officer on request:

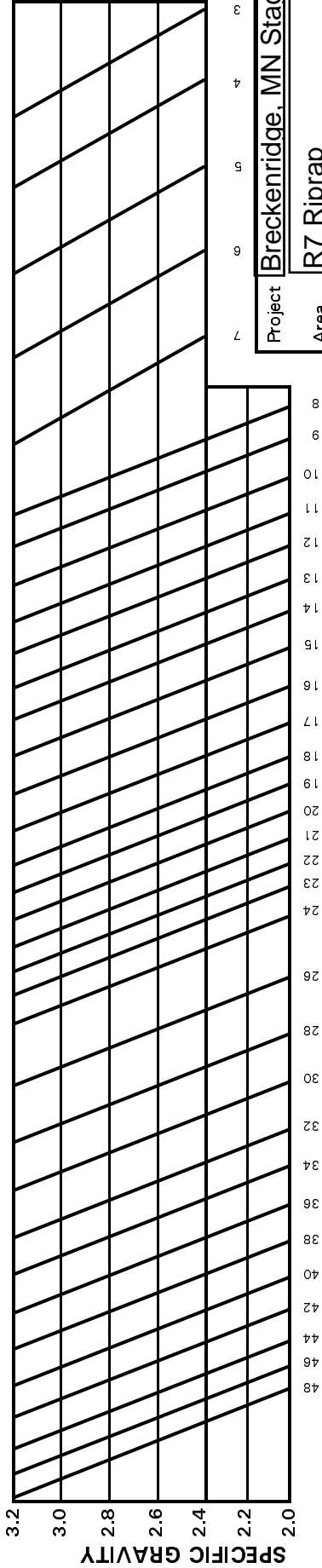
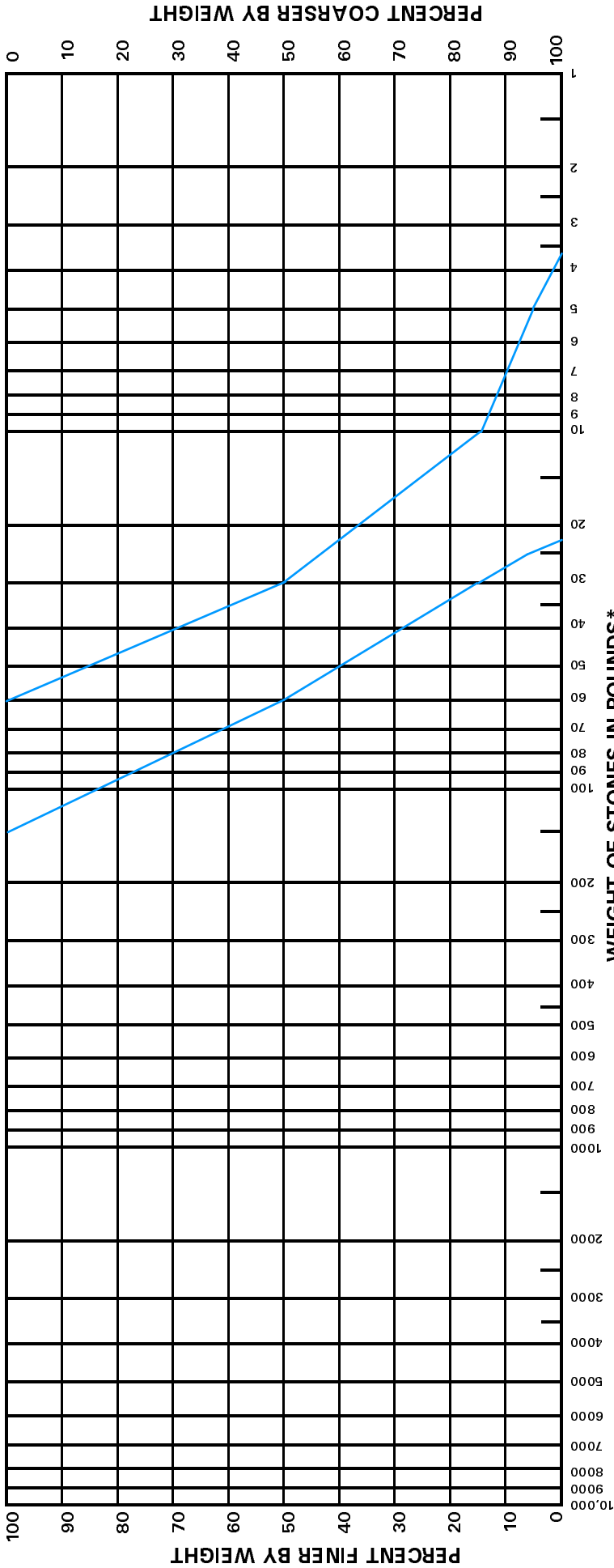
- a. Record tonnage of stone placed in completed sections of the work and check quantity for compliance with design sections.
- b. Check for uniform thickness of material layers.

-- End of Section --



Project	Breckenridge, MN Stage 1
Area	R6 Riprap
Date	Dec. 02

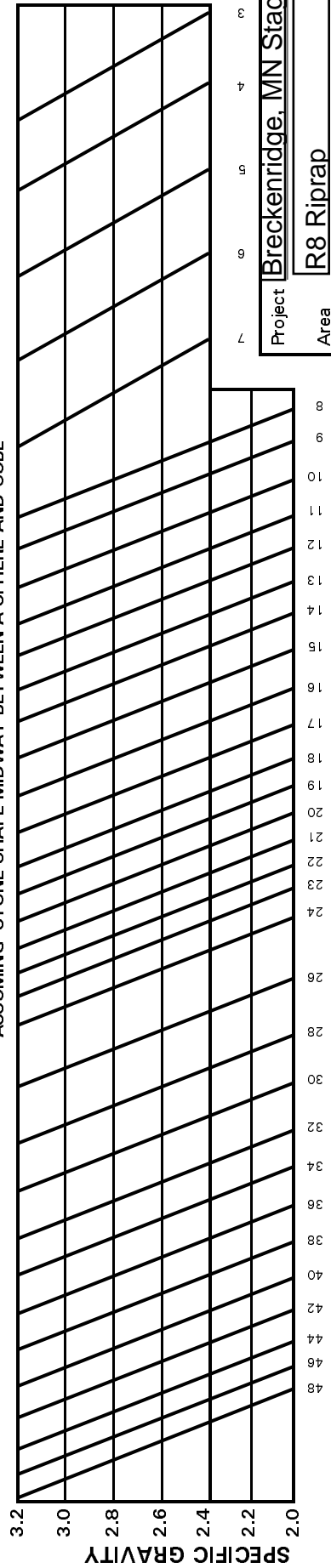
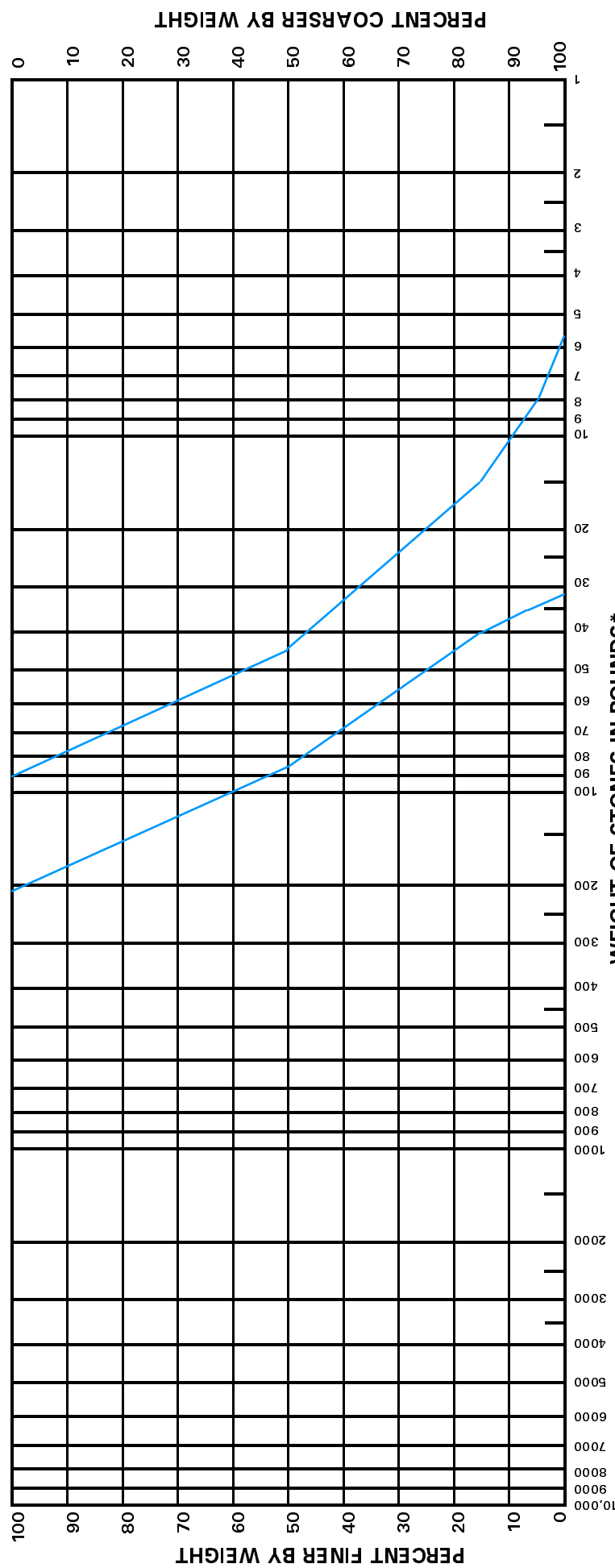
RIPRAP GRADUATION CURVES



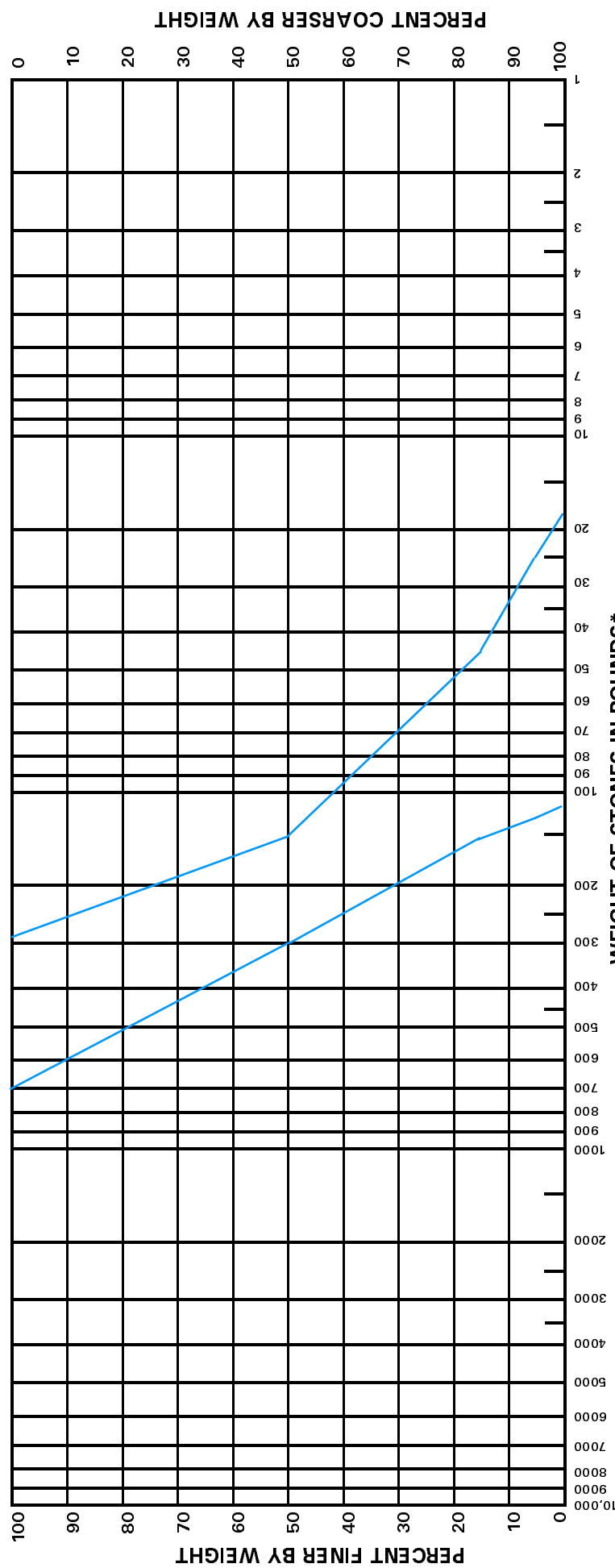
Project	Breckenridge, MN Stage 1
Area	R7 Riprap
Date	Dec. 02

Specific Gravity of Stone = 2.64

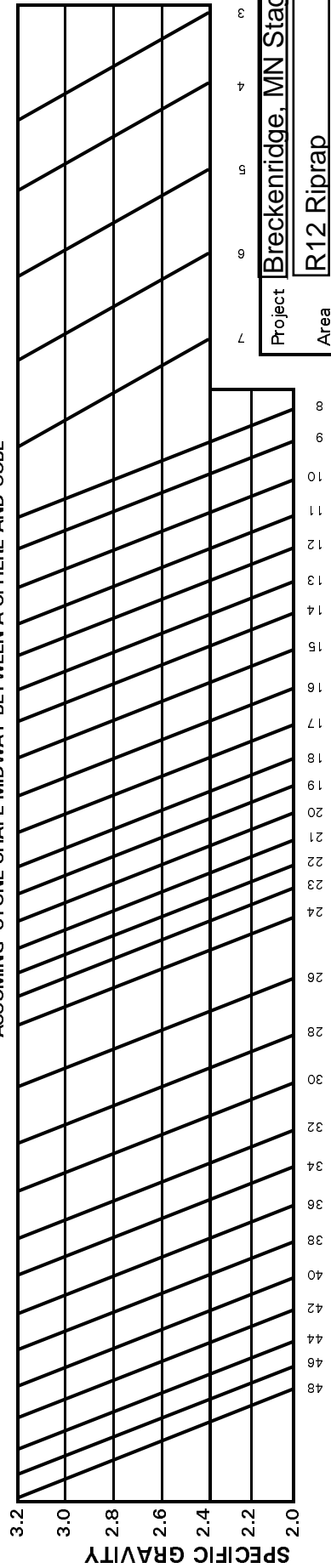
RIPRAP GRADUATION CURVES



Project	Breckenridge, MN Stage 1
Area	R8 Riprap
Date	Dec. 02



WEIGHT OF STONES IN POUNDS *
SPECIFIC GRAVITY OF ROCK...
* ASSUMING STONE SHAPE MIDWAY BETWEEN A SPHERE AND CUBE

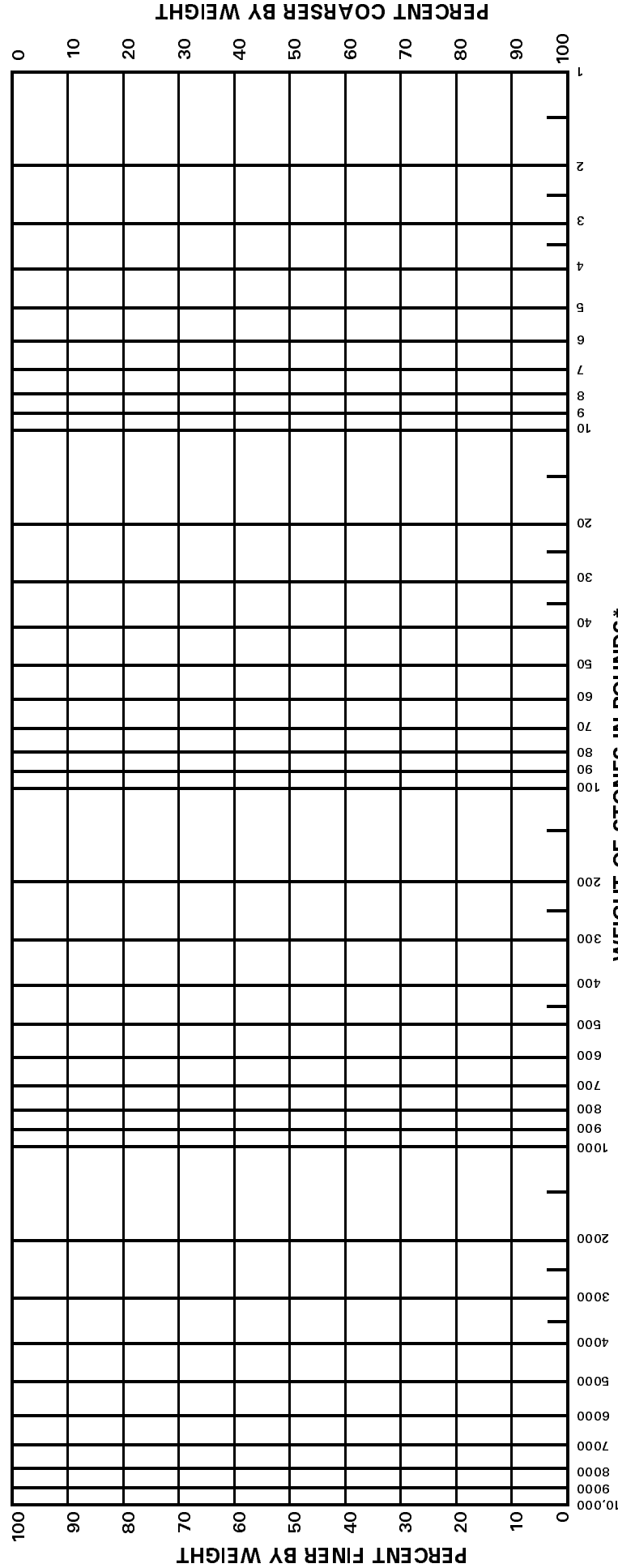


SIZE OF STONE IN INCHES

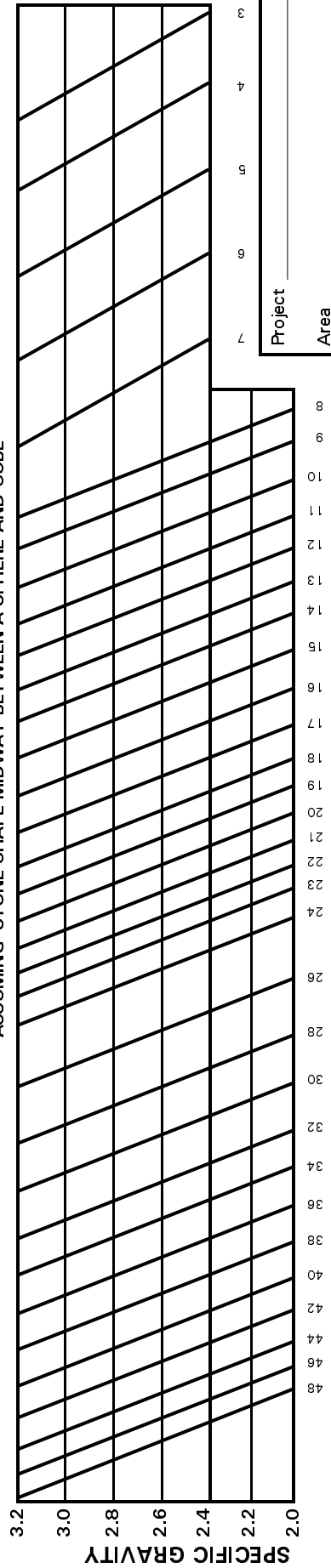
Specific Gravity of Stone = 2.64

Project	Breckenridge, MN Stage 1
Area	R12 Riprap
Date	Dec. 02

RIPRAP GRADUATION CURVES



WEIGHT OF STONES IN POUNDS *
SPECIFIC GRAVITY OF ROCK...
* ASSUMING STONE SHAPE MIDWAY BETWEEN A SPHERE AND CUBE



Project _____

Area _____

Date _____

RIPRAP GRADUATION CURVES

U.S. STANDARD SIEVE OPENING IN INCHES

U.S. STANDARD SIEVE NUMBERS

HYDROMETER

PERCENT FINER BY WEIGHT

PERCENT COARSER BY WEIGHT

GRAVEL

COARSE

FINE

COARSE

MEDIUM

FINE

SILT OR CLAY

Sample No.

Elev or Depth

Classification

Nat w %

LL

PL

PI

Project

Area

Boring

Date

GRADATION CURVES

ENG FORM 2087, 1 MAY 63

(EM 1110-2-1906)

(Proponent: CECW-EG)

ANALYSIS OF RIPPLE	
Date:	

Date:

Test No.	
----------	--

--	--

Test Made By:

[illegible]

Row (4) Add all individual stone weights listed in each column.

(5) WEIGHT CLASSES		(6) TOTAL WEIGHT EACH CLASS (lbs.)	(7) CUMMULATIVE WEIGHT PASSING (lbs.)	(8) TOTAL PERCENT PASSING (%)
PASSING (stone wt. in lbs.)	RETAINED (stone wt. in lbs.)			
	5 lbs.			
5 lbs.	PAN			
SAMPLE TOTAL			-----	-----

Column (8) Divide column (7) by sample total to get total percent passing.

WORK SHEET FOR GRADATION ANALYSIS OF RIPRAP METHOD B

Project Name:	Date:
Riprap Type:	Test No.
Source, Quarry, or Pit:	
Sample Location:	Test Made By:

Part 1. Separate rock into 5 to 7 piles, ordered by size. The largest pile should contain 2 to 5 stones. Intermediate piles between the largest stones and those smaller than 5 pounds should be approximately equal in total weight. Separate all stones before weighing.

Part 2. Summary Table.

(1) WEIGHT CLASSES		(2)	(3)	(4)
PASSING (stone wt. in lbs.)	RETAINED (stone wt. in lbs.)	TOTAL WEIGHT EACH CLASS (lbs.)	CUMMULATIVE WEIGHT PASSING (lbs.)	TOTAL PERCENT PASSING (%)
	5 lbs.			
5 lbs.	PAN			
SAMPLE TOTAL			-----	-----

Column (1) Weight the smallest and largest stone in each pile. If weight classes overlap, adjust stones as necessary and repeat.

Column (2) Weigh the total amount of rock in each pile and record.

Column (3) Add column (2) from bottom up to get cumulative weight passing.

Column (4) Divide column (3) by sample total to get total percent passing.

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02446

HORIZONTAL DIRECTIONAL DRILLING AND PIPE INSTALLATION

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 DEFINITIONS
- 1.3 SUBMITTALS
- 1.4 DELIVERY, STORAGE, AND HANDLING

PART 2 PRODUCTS

- 2.1 PIPE
 - 2.1.1 HDPE Pipe
 - 2.1.2 Fittings
- 2.2 JOINTS
- 2.3 FABRICATION
 - 2.3.1 Pipe and Fittings
 - 2.3.2 Identification
- 2.4 ACCESSORIES
- 2.5 Drilling Fluid
 - 2.5.1 Bentonite Slurry
 - 2.5.2 Sand for Contact or Consolidation Grouting
 - 2.5.3 Controlled Low Strength Fill (Flowable Fill)
- 2.6 EQUIPMENT
- 2.7 SOURCE QUALITY CONTROL

PART 3 EXECUTION

- 3.1 GENERAL
 - 3.1.1 Notification
 - 3.1.2 Water Control
 - 3.1.3 Operations
- 3.2 INSTALLATION
 - 3.2.1 Preparations
 - 3.2.2 Drilling Pilot Hole
 - 3.2.3 Reaming Pilot Hole and Pulling Pipe
 - 3.2.4 Cleaning Pipe Ends
 - 3.2.5 Handling and Disposal of Drilling Fluid and Cuttings
 - 3.2.6 End Fittings
 - 3.2.7 Pipe Abandonment
- 3.3 RESTORATION
 - 3.3.1 Access Sites
 - 3.3.2 Final Inspection

3.4 FIELD QUALITY CONTROL

3.4.1 Survey

3.4.2 Pressure Testing

-- End of Section Table of Contents --

SECTION 02446

HORIZONTAL DIRECTIONAL DRILLING AND PIPE INSTALLATION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C150	Specification for Portland Cement
ASTM C430	Test Method for Fineness of Hydraulic Cement by the 45 um (No. 325) Sieve
ASTM C618	Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Portland Cement Concrete
ASTM D4832	Test Method for Preparation and testing of Soil-Cement Slurry Test Cylinders

American Iron and Steel Institute (AISI)

Type 316 Stainless Steel

American Petroleum Institute (API)

13A

1.2 DEFINITIONS

Contact Grouting: The injection of a mixture of pea gravel, fine gravel, sands and fines plus water and Portland cement, chemical compound and possibly a non-setting or other admixture into voids outside of the casing pipe or drilled pipe, to achieve continuous contact between the casing pipe or drilled pipe and the ground.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Alignment Plots; G, AE

SD-02 Shop Drawings

Layout plan; G, AE

Layout plan should show stationing, elevations, pipe classes, and class coding.

SD-03 Product Data

Carrier Pipe; G, AE

Fittings; G, AE

Skids; G, AE

Bracing; G, AE

Related Appurtences; G, AE

SD-06 Test Reports

Field Quality Control Test Results; G, COR

Source Quality Control Tests; G, COR

Results of Alignment Plots; G, COR

Submit results of alignment plots. Superimpose these plots on a copy of the design alignment for comparison to verify compliance with alignment tolerances.

SD-07 Certificates

Submit a list of similar projects completed in the last three years. Include pipe material, pipe diameter, project length, typical length of pull including typical thrust and pullback requirements, soil conditions, project owner, and OWNER's address

For each pipe material, use only pipe from a single manufacturer. Furnish certifications of tests and inspection of pipe at the factory, plant, or foundry as required by the standard specifications to which the material is manufactured.

Names and project lists for key equipment operators and supervisors including the following:

1. List equipment each operator is certified to operate.
2. Years of experience for each operator.

1.4 DELIVERY, STORAGE, AND HANDLING

Prevent damage to the pipe when loading, transporting and unloading. Do not drop pipe.

PART 2 PRODUCTS

2.1 PIPE

High-density polyethylene pipe, fittings, and joints where and as shown conforming to the following:

2.1.1 HDPE Pipe

1. Type: Solid, smooth wall.
2. Diameter: Nominal Iron Pipe Size (IPS) 20-inch O.D. and 16.1-inch I.D.
3. Standard Dimension Ratio (SDR): 11, unless otherwise noted.
4. Pressure Rating: 160 PSI at 73 degrees F.

2.1.2 Fittings

1. Pressure Rating: Same as connected piping.
2. Outside Diameter: Consistent with ASTM F714.
3. Wall Thickness: Consistent with ASTM F714 for same sized pipe.
4. Derating: Consistent with the manufacturer's written specifications for pressure rated fittings, clearly labeled on each fitting as such.
5. Quality Control Label: As approved by the manufacturer on each fitting.

2.2 JOINTS

Thermo-butt fusion in accordance with ASTM D2657.

2.3 FABRICATION

2.3.1 Pipe and Fittings

1. Manufacture consistent with ASTM F714.
2. By same manufacturer.
3. Bends: By mitered construction and of same class/pressure rating as pressure sewer.

2.3.2 Identification

1. Continuous permanent print line on pipe displaying the following:
 - a. Manufacturer's name and location.
 - b. Date of manufacture.
 - c. Lot number.
 - d. Raw material supplier.
 - e. Production shift.
 - f. ASTM Standard (ASTM F714).
 - g. Material designation (PE3408)

2.4 ACCESSORIES

Transitions to dissimilar pipe: Butt fused polyethylene flange adapter with slip-on flange:

Material

- a. Flange adapter: Same as polyethylene pipe.
- b. Slip-on Flange: Ductile iron.
- c. Hardware: 316 stainless steel.

2.5 Drilling Fluid

2.5.1 Bentonite Slurry

Bentonite Slurry when used or required in the design prepared by the CONTRACTOR:

- a. Bentonite: API Specification 13A, high swelling montmorillonite, capable of mixing with water to form a stable homogeneous suspension.
- b. Water: Clean, potable, containing no more than 500 ppm chlorides.

2.5.2 Sand for Contact or Consolidation Grouting

- a. Clean, natural silica sand, graded such that all of the material passes the No. 20 sieve and not more than 20 percent passes the No. 200 sieve.

2.5.3 Controlled Low Strength Fill (Flowable Fill)

- a. Select and proportion ingredients to obtain compressive

strength between 25 - 75 psi at 28 days in accordance with ASTM D4832.

b. Materials:

- 1) Cement: ASTM C150, Type I or II.
- 2) Fly Ash: ASTM C618, Class F
- 3) Water: Clean, potable, containing less than 500 ppm of chlorides.

2.6 EQUIPMENT

As selected and designed by the CONTRACTOR.

Certified by manufacturer for intended purpose, diameter of pipe and expected loadings.

2.7 SOURCE QUALITY CONTROL

Document the results of all testing at the plant or factory required by the standard specification under which the pipe is manufactured including pipe thickness, pipe strength, static pressure tests, and material composition requirements.

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Notification

Notify the Contracting Officer at least seven days in advance of the planned start of work.

3.1.2 Water Control

1. Keep drilling pit subgrades continuously free from ground and surface waters during operations. Implement additional groundwater controls on short notice as required. Observed water levels prior to construction are to be below the invert elevation of the pits.

2. Direct discharge from dewatering operations into approved receiving basins.

3.1.3 Operations

1. It is not necessary to complete drilling work in one continuous, non-stop, operation. If work is interrupted or stopped prior to completion at the CONTRACTOR's discretion without prior Contracting Officer approval, the CONTRACTOR shall bear all costs related to the stoppage and restarting operations without additional payment.

2. Operate to prevent settlement, movement, or cracking of adjacent structures.

3.2 INSTALLATION

3.2.1 Preparations

1. Locate positions of entry and exit pits, establish elevation and horizontal datum for bore head control, and lay out pipe assembly area.
2. Lay out and assemble pipe in manner that does not obstruct adjacent roads and commercial or residential activities adjacent to construction easements.

3.2.2 Drilling Pilot Hole

1. Drill pilot hole from entrance point to exit point following vertical and horizontal alignment shown.
2. As pilot hole is advanced, plot actual horizontal and vertical alignment of pilot hole at intervals not exceeding 25 feet. Provide the ENGINEER with position and inclination of pilot bore.
3. Use drilling fluid under pressure or other method designed by the CONTRACTOR to control ground water and to keep the pilot hole open.
4. Alignment Requirements:
 - a. Keep the grade to no shallower than the profile shown and with no intermediate high points that might trap air in pipe after installation. Keep grade tolerance to +0 and -6 inches from that shown.
 - b. Keep curvature of completed pilot hole less than that which will produce wall stresses at 0.50 of yield stress in the pipe after it is installed and subject to maximum working pressure.
 - c. Return pilot hole that is deviating from designed horizontal and vertical alignment to proper alignment with no abrupt changes and at a rate not exceeding 1 foot per 50 feet of pilot hole advance.
 - d. Horizontal alignment of Pilot Hole: Within 3 feet of plan data.
5. Acceptance: If pilot hole alignment fails to conform to specified requirements, drill new pilot hole with alignment meeting specified requirements.

3.2.3 Reaming Pilot Hole and Pulling Pipe

1. Obtain Contracting Officer approval to precede before enlarging pilot hole and pulling pipe into position.
2. While pulling pipe, enlarge pilot hole ahead of pipe to diameter sufficient for pulling pipe into position.
3. While pulling pipe, handle pipe in manner that does not over stress pipe. Limit radius of curvature along length of pipe during installation to minimum radius of 500 feet. If pipe buckles or is otherwise damaged, remove damaged section and replace it with new pipe.
4. Pull pipe so that a minimum of 10 feet of pipe is exposed at both ends of bore.

3.2.4 Cleaning Pipe Ends

After pulling pipe, clean exposed ends for installation of fittings.

3.2.5 Handling and Disposal of Drilling Fluid and Cuttings

1. Make adequate provisions for handling and containing muddy water, drilling fluid, and cuttings during drilling operations. Do not discharge these contaminants into waterways. Handle water and materials to conform with requirements of the agency(s) with regulatory jurisdiction.
2. Construct drilling fluid pits at entry and exit points in manner that completely contains mud and prevents its escape.
3. When onsite provisions for storing muddy water, drilling fluid, or cuttings onsite are exceeded, haul contaminants away to suitable legal disposal site.
4. Conduct directional drilling operation in such manner that drilling mud is not forced into waterways, wetlands, or the ground surface.

3.2.6 End Fittings

Fabricate and install mitered fittings at ends of pipe as required for attachment of adjacent sections of pipe. Fabricate fitting angles to correspond to field conditions. Do not connect adjacent sections of pipe by beveling pipe ends. Coat and line fittings as specified for pipe.

3.2.7 Pipe Abandonment

1. In event of failure to install pipe conforming to all tolerance and test requirements of this Section, retain possession of pipe and remove it from site. Completely fill borehole with grout, sand, or flowable fill so as to prevent future settlement.
2. If pipe cannot be withdrawn, cut pipe off at least 3 feet

below ground surface, record location on drawings, and abandon pipe after filling pipe and the annular space with flowable fill.

3.3 RESTORATION

3.3.1 Access Sites

1. At the conclusion of each directional drilling operations, remove excavation support systems for drilling entry pits and exit pits.
2. Backfill entry and exit pits consistent with the requirements of Section 02300 EARTHWORK. Restore the profile of the right-of-way to its original condition. Install sodding or seeding to match existing, consistent with the requirements of Section 02920 SEEDING, SODDING, AND TOPSOIL and as shown on the drawings.
3. Remove all equipment, supplies, excess excavation materials and miscellaneous items associated with the directional drilling operation and leave the site in a clean and tidy condition.

3.3.2 Final Inspection

Coordinate and schedule a final inspection of the work by the Contracting Officer.

3.4 FIELD QUALITY CONTROL

3.4.1 Survey

Perform an elevation survey of the surface of the ground above each pipe centerline before, during and after the drilling operations. Conduct the survey to an elevation accuracy of 0.1 feet at 25-foot intervals along the pipe centerline. Measure daily during active operations above the work and at least 10 feet in front of the work.

3.4.2 Pressure Testing

After pulling pipe into position but prior to grouting, and before attachment to adjacent sections of pipe, pressure test pipe as listed below:

1. Test Pressure: 2.5 times the maximum working pressure that occurs anywhere along the pipeline.
2. Criteria: Less than 3 PSI drop in ½-hour.
3. Provide temporary pipe restraint as required for testing.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02464

METAL SHEET PILING

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DELIVERY, STORAGE AND HANDLING

PART 2 PRODUCTS

- 2.1 METAL SHEET PILING
 - 2.1.1 Materials
- 2.2 WELDING ELECTRODES
- 2.3 APPURTENANT METAL MATERIALS
- 2.4 TESTS, INSPECTIONS, AND VERIFICATIONS
 - 2.4.1 Materials Tests

PART 3 EXECUTION

- 3.1 INSTALLATION
 - 3.1.1 Pile Driving Equipment
 - 3.1.1.1 Driving Hammers
 - 3.1.1.2 Jetting Equipment
 - 3.1.2 Placing and Driving
 - 3.1.2.1 Placing
 - 3.1.2.2 Driving
 - 3.1.3 Cutting-Off and Splicing
 - 3.1.4 Inspection of Driven Piling
 - 3.1.5 Pulling and Redriving
- 3.2 REMOVAL
 - 3.2.1 Pulling
 - 3.2.2 Sorting, Cleaning, Inventorying and Storing

-- End of Section Table of Contents --

SECTION 02464

METAL SHEET PILING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 6/A 6M	(2001B) General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
ASTM A 328/A 328M	(2000) Steel Sheet Piling
ASTM A 572/A 572M	(2000) High-Strength Low-Alloy Columbium-Vanadium Structural Steel

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Metal Sheet Piling; G, AE

Detail drawings for sheet piling including fabricated sections shall show complete piling dimensions and details, driving sequence and location of installed piling. Detail drawings shall include details and dimensions of templates and other temporary guide structures for installing piling. Detail drawings shall provide details of the method of handling piling to prevent permanent deflection, distortion or damage to piling interlocks.

Driving; G, COR

Records of the sheet piling driving operations shall be submitted after driving is completed. These records shall provide a system of identification which shows the disposition of approved piling in the work, driving equipment performance data, piling penetration rate data, piling dimensions and top and bottom

elevations of installed piling. The format for driving records shall be as directed.

SD-03 Product Data

Pile Driving Equipment; G, COR

Complete descriptions of sheet piling driving equipment including hammers, jetting equipment, extractors, protection caps and other installation appurtenances shall be submitted for approval prior to commencement of work.

Pulling and Redriving; G, COR

The proposed method of pulling sheet piling shall be submitted and approved prior to pulling any piling.

Interlocked Joint Strength in Tension Test; G, ED

The procedure for testing sheet piling interlocked joint strength in tension shall be submitted and approved prior to testing piling.

SD-06 Test Reports

Materials Tests; G, COR

Certified materials tests reports showing that sheet piling and appurtenant metal materials meet the specified requirements shall be submitted for each shipment and identified with specific lots prior to installing materials. Material test reports shall meet the requirements of ASTM A 6/A 6M.

1.3 DELIVERY, STORAGE AND HANDLING

Materials delivered to the site shall be new and undamaged and shall be accompanied by certified test reports. The manufacturer's logo and mill identification mark shall be provided on the sheet piling as required by the referenced specifications. Sheet piling shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion or damage to the interlocks. Storage of sheet piling should also facilitate required inspection activities.

PART 2 PRODUCTS

2.1 METAL SHEET PILING

Metal sheet piling shall be continuously interlocking hot-rolled steel sections conforming to ASTM A 328/A 328M. The interlocks of sheet piling shall be free-sliding, provide a swing angle suitable for the intended installation but not less than 5 degrees when interlocked, and maintain continuous interlocking when installed. Sheet piling shall be provided with standard pulling holes. Metalwork fabrication for sheet piling shall be as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK,

AND MISCELLANEOUS PROVISIONS.

2.1.1 Materials

Steel sheet piling shall have the properties equivalent to those listed below.

- (1) Steel yield strength: 38,500 pounds per square inch.
- (2) Nominal web thickness: 3/8 inch
- (3) Section modulus per lineal foot of wall: 5.4 inches cubed
- (4) Weight per square foot of wall: 22.0 pounds
- (5) Weight per lineal foot of wall: 36.0 pounds

2.2 WELDING ELECTRODES

AWS D1.1 and D2.3 E70 Electrode.

2.3 APPURTENANT METAL MATERIALS

Metal plates, shapes, bolts, nuts, rivets and other appurtenant fabrication and installation materials shall conform to the manufacturer's standards, to the requirements specified in ASTM A 6/A 6M, and to Section 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS.

2.4 TESTS, INSPECTIONS, AND VERIFICATIONS

Requirements for material tests, workmanship and other measures for quality assurance shall be as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, AND MISCELLANEOUS PROVISIONS.

2.4.1 Materials Tests

Sheet piling and appurtenant materials shall be tested and certified by the manufacturer to meet the specified chemical, mechanical and section property requirements prior to delivery to the site. Testing of sheet piling for mechanical properties shall be performed after the completion of all rolling and forming operations. Testing of sheet piling shall meet the requirements of ASTM A 6/A 6M.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Pile Driving Equipment

Pile driving equipment shall conform to the following requirements.

3.1.1.1 Driving Hammers

Hammers shall be steam, air, or diesel drop, single-acting, double-acting, differential-acting, or vibratory type. The driving energy of the hammers shall be as recommended by the manufacturer for the piling weights and subsurface materials to be encountered.

3.1.1.2 Jetting Equipment

Jetting equipment shall have not less than two removable or fixed jets of the water or combination air-water type. Water jets shall be designed so that the discharge volume and pressure are sufficient to freely erode the material under and adjacent to the piling.

3.1.2 Placing and Driving

3.1.2.1 Placing

Any excavation required within the area where sheet pilings are to be installed shall be completed prior to placing sheet pilings. Pilings to be placed in cofferdam cells and connecting arcs shall be picked up and completely threaded to demonstrate that they slide freely in interlock. Pilings shall be carefully located as shown or directed. Pilings shall be placed plumb with out-of-plumbness not exceeding 1/8 inch per foot of length and true to line. Temporary wales, templates, master pilings, current deflectors or guide structures shall be provided to insure that the pilings are placed and driven to the correct alignment. At least two templates shall be used in placing each piling and the maximum spacing of templates shall not exceed 20 feet. Pilings properly placed and driven shall be interlocked throughout their length with adjacent pilings to form a continuous diaphragm throughout the length or run of piling wall.

3.1.2.2 Driving

Pilings shall be driven with the proper size hammer and by approved methods so as not to subject the pilings to damage and to ensure proper interlocking throughout their lengths. Driving hammers shall be maintained in proper alignment during driving operations by use of leads or guides attached to the hammer. Caution shall be taken in the sustained use of vibratory hammers when a hard driving condition is encountered to avoid interlock-melt or damages. The use of vibratory hammers should be discontinued and impact hammers employed when the penetration rate due to vibratory loading is one foot or less per minute. A protecting cap shall be employed in driving when using impact hammers to prevent damage to the tops of pilings. Pilings damaged during driving or driven out of interlock shall be removed and replaced at the Contractor's expense. Pilings shall be driven without the aid of a water jet. Adequate precautions shall be taken to insure that pilings are driven plumb. If at any time the forward or leading edge of the piling wall is found to be out-of-plumb in the plane of the wall the piling being driven shall be driven to the required depth and tapered pilings shall be provided and driven to interlock with the out-of-plumb leading edge or other approved corrective measures shall be taken to insure the plumbness of succeeding pilings. The maximum permissible taper for any tapered piling shall be 1/8 inch per foot of length. Pilings in each run or continuous length of piling wall shall be driven alternately in increments of depth to the required depth or elevation. No piling shall be driven to a lower elevation than those behind it in the same run except when the pilings behind it cannot be driven deeper. If the piling next to the one being driven tends to follow below final elevation it may be pinned to the next adjacent piling. If obstructions restrict driving a piling to the specified penetration the

obstructions shall be removed or penetrated with a chisel beam. If the Contractor demonstrates that removal or penetration is impractical the Contractor shall make changes in the design alignment of the piling structure as directed to insure the adequacy and stability of the structure. Pilings shall be driven to depths shown and shall extend up to the elevation indicated for the top of pilings. Pilings shall not be driven within 100 feet of concrete less than 7 days old.

3.1.3 Cutting-Off and Splicing

Pilings driven to refusal or to the point where additional penetration cannot be attained and are extending above the required top elevation in excess of the specified tolerance shall be cut off to the required elevation. Pilings driven below the required top elevation and pilings damaged by driving and cut off to permit further driving shall be extended as required to reach the top elevation by splicing when directed at no additional cost to the Government. If directed pilings shall be spliced as required to drive them to depths greater than shown and extend them up to the required top elevation. Pilings adjoining spliced pilings shall be full length unless otherwise approved. Splicing of pilings shall be as indicated. Ends of pilings to be spliced shall be squared before splicing to eliminate dips or camber. Pilings shall be spliced together with concentric alignment of the interlocks so that there are no discontinuities, dips or camber at the abutting interlocks. Spliced pilings shall be free sliding and able to obtain the maximum swing with contiguous pilings. The tops of pilings excessively battered during driving shall be trimmed when directed at no cost to the Government. Piling cut-offs shall become the property of the Contractor and shall be removed from the site. The Contractor shall cut holes in pilings for bolts, rods, drains or utilities as shown or as directed. All cutting shall be done in a neat and workmanlike manner. A straight edge shall be used in cuts made by burning to avoid abrupt nicks. Bolt holes in steel piling shall be drilled or may be burned and reamed by approved methods which will not damage the surrounding metal. Holes other than bolt holes shall be reasonably smooth and the proper size for rods and other items to be inserted.

3.1.4 Inspection of Driven Piling

The Contractor shall inspect the interlocked joints of driven pilings extending above ground. Pilings found to be out of interlock shall be removed and replaced at the Contractor's expense.

3.1.5 Pulling and Redriving

In the pulling and redriving of piles as directed, the Contractor shall pull selected pilings after driving to determine the condition of the underground portions of pilings. Any piling so pulled and found to be damaged to the extent that its usefulness in the structure is impaired shall be removed and replaced at the Contractor's expense. Pilings pulled and found to be in satisfactory condition shall be redriven when directed.

3.2 REMOVAL

The removal of sheet pilings shall consist of pulling, sorting, cleaning the interlocks, inventorying and storing previously installed sheet pilings as shown and directed.

3.2.1 Pulling

The method of pulling piling must be approved. Pulling holes shall be provided in pilings as required. Extractors shall be of suitable type and size. Care shall be exercised during pulling of pilings to avoid damaging piling interlocks and adjacent construction. If the Contracting Officer determines that adjacent permanent construction has been damaged during pulling the Contractor will be required to repair this construction at no cost to the Government. Pilings shall be pulled one sheet at a time. Pilings fused together shall be separated prior to pulling unless the Contractor demonstrates to the satisfaction of the Contracting Officer that the pilings cannot be separated. The Contractor will not be paid for the removal of pilings damaged beyond structural use due to proper care not being exercised during pulling.

3.2.2 Sorting, Cleaning, Inventorying and Storing

Pulled pilings shall be sorted, cleaned, inventoried and stored by type into groups as:

- a. Piling usable without reconditioning.
- b. Piling requiring reconditioning.
- c. Piling damaged beyond structural use.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02532

FORCE MAINS AND INVERTED SIPHONS; SEWER

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DELIVERY AND STORAGE

PART 2 PRODUCTS

- 2.1 PIPE AND FITTINGS
 - 2.1.1 Ductile Iron Pipe
- 2.2 JOINTS
 - 2.2.1 Ductile Iron Piping
- 2.3 VALVES
 - 2.3.1 Gate Valves
 - 2.3.2 Air Release Valves
- 2.4 VALVE MANHOLES
- 2.5 MISCELLANEOUS MATERIALS
 - 2.5.1 Bolts, Nuts and Glands
 - 2.5.2 Joint Compound
 - 2.5.3 Joint Tape
 - 2.5.4 Pipe Encasement
 - 2.5.5 Sanitary Bypass

PART 3 EXECUTION

- 3.1 INSTALLATION
 - 3.1.1 Cutting
 - 3.1.2 Laying
 - 3.1.3 HDPE Pipe
 - 3.1.4 Force main bypass
 - 3.1.5 Jointing
 - 3.1.5.1 Joints for Ductile Iron Pipe
 - 3.1.6 Coating and Lining
 - 3.1.7 PE Pipe Encasement
 - 3.1.8 Installation of Valves
 - 3.1.9 Installation of Valve Manholes
 - 3.1.10 Drain Lines
 - 3.1.11 Joint Restraint
 - 3.1.11.1 Restrained Joints
 - 3.1.12 Bonded Joints
- 3.2 HYDROSTATIC TESTS

- 3.2.1 Pressure Test
- 3.2.2 Leakage Test
- 3.2.3 Retesting

-- End of Section Table of Contents --

SECTION 02532

FORCE MAINS AND INVERTED SIPHONS; SEWER

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN PETROLEUM INSTITUTE (API)

API Spec 6D	(1994; Supple 1 Jun 1996; Supple 2 Dec 1997) Pipeline Valves (Gate, Plug, Ball, and Check Valves)
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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53	(1999b) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM C 478	(1997) Precast Reinforced Concrete Manhole Sections
ASTM D 2122	(1998) Determining Dimensions of Thermoplastic Pipe and Fittings
ASTM D 2657	(1997) Heat Fusion Joining Polyolefin Pipe and Fittings
ASTM D 2774	(1994) Underground Installation of Thermoplastic Pressure Piping
ASTM D 3035	(1995) Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter
ASTM D 3139	(1998) Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
ASTM D 3350	(1998a) Polyethylene Plastics Pipe and Fittings Materials
ASTM F 477	(1999) Elastomeric Seals (Gaskets) for Joining Plastic Pipe

ASME INTERNATIONAL (ASME)

ASME B16.1 (1998) Cast Iron Pipe Flanges and Flanged Fittings

ASME B16.3 (1992) Malleable Iron Threaded Fittings

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C105 (1993) Polyethylene Encasement for Ductile-Iron Pipe Systems

AWWA C110 (1993) Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. (75 mm through 1200 mm), for Water and Other Liquids

AWWA C111 (1995) Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings

AWWA C115 (1996) Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges

AWWA C151 (1996) Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids

AWWA C200 (1997) Steel Water Pipe - 6 In. (150 mm) and Larger

AWWA C203 (1997) Coal-Tar Protective Coatings and Linings for Steel Water Pipelines - Enamel and Tape - Hot-Applied

AWWA C207 (1994) Steel Pipe Flanges for Waterworks Service - Sizes 4 In. Through 144 In. (100 mm through 3,600 mm)

AWWA C208 (1996) Dimensions for Fabricated Steel Water Pipe Fittings

AWWA C210 (1997) Liquid-Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines

AWWA C300 (1997) Reinforced Concrete Pressure Pipe, Steel-Cylinder Type, for Water and Other Liquids

AWWA C301 (1992) Prestressed Concrete Pressure Pipe, Steel-Cylinder Type, for Water and Other Liquids

AWWA C303 (1995) Concrete Pressure Pipe, Bar-Wrapped, Steel-Cylinder Type

AWWA C500	(1993; C500a) Metal-Seated Gate Valves for Water Supply Service
AWWA C508	(1993; C508a) Swing-Check Valves for Waterworks Service, 2 In. (50 mm) Through 24 In. (600 mm) NPS
AWWA C600	(1993) Installation of Ductile-Iron Water Mains and Their Appurtenances

DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA)

DIPRA-Restraint Design	(1997) Thrust Restraint Design for Ductile Iron Pipe
------------------------	--

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-78	(1998) Cast Iron Plug Valves, Flanged and Threaded Ends
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1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-06 Test Reports

Hydrostatic Tests; G, COR.

Copies of test results.

1.3 DELIVERY AND STORAGE

Pipe, fittings and accessories, and pipe coatings shall not be damaged during delivery, handling, and storage.

PART 2 PRODUCTS

2.1 PIPE AND FITTINGS

Piping for force mains 4 inches in diameter and larger shall be ductile iron or high-density polyethylene (HDPE) as shown on the plans and referenced in Section 02446 HORIZONTAL DIRECTIONAL DRILLING AND PIPE INSTALLATION. Pipe shall conform to the respective specifications and other requirements specified below.

2.1.1 Ductile Iron Pipe

- a. Ductile Iron Pipe: AWWA C151, Class 52 for mechanical joint pipe and Class 53 for flanged pipe, unless otherwise shown or specified.

- b. Cement-mortar lining: Conform to AWWA C104.
- c. Fittings, Mechanical: AWWA C110, rated for 250 psi.

2.2 JOINTS

2.2.1 Ductile Iron Piping

- a. Mechanical Joints: AWWA C111 as modified by AWWA C151.
- b. Flanged Joints: AWWA C115. "Uni-flange" and hollow-back flange type connections are not allowed.
- c. Joint Restraint: EBBA Iron, Inc, Megalug, or equal, rated for 250 psi.
- d. DIP/PCCP Connection: Joint adaptor as recommended by DIP manufacturer.

2.3 VALVES

2.3.1 Gate Valves

Gate valves 3 inches and larger shall comply with AWWA C500. Valves for buried service shall be non-rising stem (NRS), 2 inch square nut operated with joints applicable to the pipe or installation. Buried valves shall be furnished with extension stems comprising socket, extension stem and operating nut, and shall be of an appropriate length to bring operating nut to within 6 inches of grade. One 4 foot "T" handle valve wrench shall be furnished for each quantity of 6 buried valves. Gate valves that are exposed or installed inside shall be outside screw and yoke (OS&Y), handwheel operated with flange ends unless otherwise indicated. Gate valve operating nuts and handwheels shall have an arrow and the word "OPEN" cast in raised letters to indicate the direction of opening. Gate valves 14 inches and larger shall be equipped with gearing to reduce operating effort. Gate valves 14 inches and larger installed in horizontal lines in horizontal position with stems horizontal shall be equipped with bronze track, roller and scrapers to support the weight of the gate for its full length of travel. Gate valves 14 inches and larger installed in vertical pipe lines with stems horizontal shall be fitted with slides to assist the travel of the gate assembly.

2.3.2 Air Release Valves

Air release valves shall be designed to permit release of air from an empty pipe during filling and shall be capable of discharging accumulated air in the line while the line is in operation and under pressure. Valves shall be attached by means of threaded pipe connections. Valves shall be vented to the atmosphere.

- a. Automatic Air Release Valve: Automatic air release valves shall be of the compound lever type capable of withstanding operating pressures of 250 psi. The valves shall have a 1/2 inch outlet.

The body and cover of the valve shall be of iron with a stainless steel float. All internal parts shall be stainless steel or bronze. The valve shall be specifically adapted for use with sewage. Each valve shall be complete with hose and blow-off valves to permit backflushing without dismantling the valve.

2.4 VALVE MANHOLES

Valve manholes shall be precast concrete units conforming to ASTM C 478.

2.5 MISCELLANEOUS MATERIALS

Miscellaneous materials shall comply with the following requirements:

2.5.1 Bolts, Nuts and Glands

AWWA C111.

2.5.2 Joint Compound

A stiff mixture of graphite and oil or inert filler and oil.

2.5.3 Joint Tape

ASTM D 3308.

2.5.4 Pipe Encasement

Polyethylene: Conform to AWWA C105/A21.5, Class C (Black), tube form. AWWA C105/A21.5 specifies 8-mil thickness.

2.5.5 Sanitary Bypass

Hydra-stop or equal, bullet type bypass line stopping valve. 12 inch minimum carrier pipe able to withstand 150 psi pressures.

PART 3 EXECUTION

3.1 INSTALLATION

Pipe, pipe fittings, and appurtenances shall be installed at the locations indicated. Excavation, trenching, and backfilling shall be as specified in Section 02316 EXCAVATION, TRENCHING AND BACKFILLING FOR UTILITY SYSTEMS.

3.1.1 Cutting

Pipe shall be cut in a neat manner with mechanical cutters. Wheel cutters shall be used where practicable. Sharp and rough edges shall be ground smooth and loose material removed from the pipe before laying.

3.1.2 Laying

Except where otherwise authorized, pipe shall be laid with bells facing the direction of laying. Before lowering and while suspended, the pipe shall

be inspected for defects. Defective material shall be rejected. Pipe shall be laid in compliance with the following:

- a. Ductile Iron: AWWA C600.

3.1.3 HDPE Pipe

Installation shall be done as described in Section 02446 HORIZONTAL DIRECTIONAL DRILLING AND PIPE INSTALLATION.

3.1.4 Force main bypass

A temporary bypass must be installed to prevent service interruption during the permanent connection and construction of the force main offset with appurtenances.

3.1.5 Jointing

3.1.5.1 Joints for Ductile Iron Pipe

All underground joints shall be restrained mechanical connections. Installation of mechanical joints shall comply with AWWA C600 and the manufacturer's instructions. Installation of flanged joints shall comply with manufacturer's instructions.

3.1.6 Coating and Lining

Field coating of non-galvanized steel pipe shall comply with AWWA C203. The applied materials shall be tested by means of a spark-type electrical device in compliance with AWWA C203. Flaws and holidays in the coating or lining of the pipe and the pipe joints shall be repaired; the repaired areas shall be at least equal in thickness to the minimum required for the pipe.

3.1.7 PE Pipe Encasement

Encasement shall be in accordance with AWWA C105.

3.1.8 Installation of Valves

Prior to installation, valves shall be cleaned of all foreign matter and inspected for damage. Valves shall be fully opened and closed to ensure that all parts are properly operating. Valves shall be installed with the stem in the vertical position. Valves shall be installed in valve manholes as indicated.

3.1.9 Installation of Valve Manholes

Valve manholes shall be installed as indicated.

3.1.10 Drain Lines

Drain lines shall be installed where indicated. The drain line shall consist of a tee in the main line with a 4 inch diameter branch, a 4 inch

diameter elbow, and a 4 inch gate valve.

3.1.11 Joint Restraint

Plugs, caps, tees and bends deflecting 11-1/4 degrees or more, either vertically or horizontally, shall be provided with joint restraints. Valves shall be securely anchored or shall be provided with joint restraints to prevent movement.

3.1.11.1 Restrained Joints

For ductile iron pipe, restrained joints shall be designed by the Contractor or the pipe manufacturer in accordance with DIPRA-Restraint Design.

3.1.12 Bonded Joints

Where indicated, a metallic bond shall be provided at each joint, including joints made with flexible couplings or rubber gaskets, of ferrous-metallic piping to effect continuous conductivity. The bond shall be of the thermal-weld type.

3.2 HYDROSTATIC TESTS

The pipeline shall be subjected to both a pressure test and a leakage test.

The method proposed for disposal of waste water from hydrostatic tests shall be approved by the Contracting Officer. Testing shall be performed by an approved independent testing laboratory or by the Contractor subject to approval. The test may be witnessed by the Contracting Officer. The Contracting Officer shall be notified at least 7 days in advance of equipment tests. The final test report shall be delivered to the Contracting Officer within 30 days of the test.

3.2.1 Pressure Test

After the pipe has been installed, joints completed, thrust blocks have been in place for at least five days, and the trench has been partially backfilled, leaving the joints exposed for examination, the pipe shall be filled with water to expel all air. The pipeline shall be subjected to a test pressure of 100 psi or 150 percent of the working pressure, whichever is greater, for a period of at least one hour. Each valve shall be opened and closed several times during the test. The exposed pipe, joints, fitting, and valves shall be examined for leaks. Visible leaks shall be stopped or the defective pipe, fitting, joints, or valve shall be replaced.

3.2.2 Leakage Test

The leakage test may be conducted subsequent to or concurrently with the pressure test. The amount of water permitted as leakage for the line shall be placed in a sealed container attached to the supply side of the test pump. No other source of supply will be permitted to be applied to the pump or line under test. The water shall be pumped into the line by the test pump as required to maintain the specified test pressure as described for pressure test for a 2 hour period. Exhaustion of the supply or the

inability to maintain the required pressure will be considered test failure. The manufacturer shall be consulted prior to testing for special testing considerations. Allowable leakage shall be determined by the following I-P formula:

$L = NDP/K$ Where:

L = Allowable leakage in gallons per hour.

N = Number of joints in length of pipeline tested.

D = Nominal diameter of the pipe in inches.

P = Square root of the test pressure in psig.

K = 7400 for pipe materials.

At the conclusion of the test, the amount of water remaining in the container shall be measured and the results recorded in the test report.

3.2.3 Retesting

If any deficiencies are revealed during any test, such deficiencies shall be corrected and the tests shall be reconducted until the results of the tests are within specified allowances, without additional cost to the Government.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02620

SUBDRAINAGE SYSTEM

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DELIVER, STORAGE, AND HANDLING
 - 1.3.1 Delivery and Storage
 - 1.3.2 Handling

PART 2 PRODUCTS

- 2.1 PIPE FOR SUBDRAINS
 - 2.1.1 Plastic Pipe
 - 2.1.1.1 Corrugated Polyethylene (PE) Pipe and Fittings
 - 2.1.1.2 Pipe Perforations
- 2.2 FILTER FABRIC
- 2.3 SUBDRAIN FILTER AND BEDDING MATERIAL

PART 3 EXECUTION

- 3.1 EXCAVATION AND BEDDING FOR SUBDRAIN SYSTEMS
- 3.2 INSTALLATION OF PIPE FOR SUBDRAINS
 - 3.2.1 Installation of Pipe for Subdrains
 - 3.2.1.1 Pipelaying
 - 3.2.1.2 Jointings
- 3.3 INSTALLATION OF FILTER MATERIAL AND BACKFILLING FOR SUBDRAINS
- 3.4 TESTS
 - 3.4.1 Pipe Test

-- End of Section Table of Contents --

SECTION 02620

SUBDRAINAGE SYSTEM

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
(AASHTO)

AASHTO M 252M (1996) Corrugated Polyethylene Drainage
Tubing

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-04 Samples

Filter Fabric; G, COR
Pipe for Subdrains; G, COR

Samples of filter fabric, pipe, and pipe fittings, before starting the work.

SD-07 Certificates

Filter Fabric
Pipe for Subdrains

Certifications from the manufacturers attesting that materials meet specification requirements. Certificates are required for drain pipe, drain tile, fittings, and filter fabric.

1.3 DELIVER, STORAGE, AND HANDLING

1.3.1 Delivery and Storage

Materials delivered to site shall be inspected for damage, unloaded, and stored with minimum handling. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt

and debris. During shipment and storage, filter fabric shall be wrapped in burlap or similar heavy duty protective covering. The storage area shall protect the fabric from mud, soil, dust, and debris. Filter fabric materials that are not to be installed immediately shall not be stored in direct sunlight. Plastic pipe shall be installed within 6 months from the date of manufacture unless otherwise approved.

1.3.2 Handling

Materials shall be handled in such a manner as to insure delivery to the trench in sound undamaged condition. Pipe shall be carried and not dragged to the trench.

PART 2 PRODUCTS

2.1 PIPE FOR SUBDRAINS

Pipe for subdrains shall be of the types and sizes indicated.

2.1.1 Plastic Pipe

Plastic pipe shall contain ultraviolet inhibitor to provide protection from exposure to direct sunlight.

2.1.1.1 Corrugated Polyethylene (PE) Pipe and Fittings

Use AASHTO M 252M for pipes 3 to 10 inches in diameter. Fittings shall be manufacturer's standard type and shall conform to the indicated specification.

2.1.1.2 Pipe Perforations

Water inlet area shall be a minimum of 0.5 square inch per linear foot. Manufacturer's standard perforated pipe which essentially meets these requirements may be substituted with prior approval of the Contracting Officer.

- a. Circular Perforations in Plastic Pipe: Circular holes shall be cleanly cut not more than 3/8 inch) or less than 3/16 inch in diameter and arranged in rows parallel to the longitudinal axis of the pipe. Perforations shall be approximately 3 inches center-to-center along rows. The rows shall be approximately 1-1/2 inches apart and arranged in a staggered pattern so that all perforations lie at the midpoint between perforations in adjacent rows. The rows shall be spaced over not more than 155 degrees of circumference. The spigot or tongue end of the pipe shall not be perforated for a length equal to the depth of the socket, and perforations shall continue at uniform spacing over the entire length of the pipe.
- b. Slotted Perforations in Plastic Pipe: Circumferential slots shall be cleanly cut so as not to restrict the inflow of water and uniformly spaced along the length and circumference of the tubing. Width of slots shall not exceed 1/8 inch nor be less than 1/32

inch. The length of individual slots shall not exceed 1-1/4 inches on 3 inch diameter tubing, 10 percent of the tubing inside nominal circumference on 4 to 8 inch diameter tubing, and 2-1/2 inches on 10 inch diameter tubing. Rows of slots shall be symmetrically spaced so that they are fully contained in 2 quadrants of the pipe. Slots shall be centered in the valleys of the corrugations of profile wall pipe.

2.2 FILTER FABRIC

Filter fabric shall conform to Mn/DOT Type 1 and the requirements of Section 02373 GEOTEXTILES.

2.3 SUBDRAIN FILTER AND BEDDING MATERIAL

Subdrain filter and bedding material shall be washed sand, sand and gravel, crushed stone, crushed stone screenings, or slag composed of hard, tough, durable particles free from adherent coatings. Filter material shall not contain corrosive agents, organic matter, or soft, friable, thin, or elongated particles and shall be evenly graded between the limits shown. Gradation curves will exhibit no abrupt changes in slope denoting skip or gap grading. Filter materials shall be clean and free from soil and foreign materials. Filter blankets found to be dirty or otherwise contaminated shall be removed and replaced with material meeting the specific requirements, at no additional cost to the Government.

PART 3 EXECUTION

3.1 EXCAVATION AND BEDDING FOR SUBDRAIN SYSTEMS

Trenching and excavation, including the removal of rock and unstable material, shall be in accordance with Section 02316 EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITY SYSTEMS. Bedding material shall be placed in the trench as indicated or as required as replacement materials used in those areas where unstable materials were removed. Compaction of the bedding material shall be as specified for cohesionless material in Section 02316 EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITY SYSTEMS.

3.2 INSTALLATION OF PIPE FOR SUBDRAINS

3.2.1 Installation of Pipe for Subdrains

3.2.1.1 Pipelaying

Each pipe shall be carefully inspected before it is laid. Any defective or damaged pipe shall be rejected. No pipe shall be laid when the trench conditions or weather is unsuitable for such work. Water shall be removed from trenches by sump pumping or other approved methods. The pipe shall be laid to the grades and alignment as indicated. The pipe shall be bedded to the established gradeline. Perforations shall be centered on the bottom of the pipe. Pipes of either the bell-and-spigot type or the tongue-and-groove type shall be laid with the bell or groove ends upstream. All pipes in place shall be approved before backfilling.

3.2.1.2 Jointings

- a. Perforated Corrugated Polyethylene Pipe: Perforated corrugated polyethylene drainage pipe shall be installed in accordance with the manufacturer's specifications and as specified herein. A pipe with physical imperfections shall not be installed. No more than 5 percent stretch in a section will be permitted.

3.3 INSTALLATION OF FILTER MATERIAL AND BACKFILLING FOR SUBDRAINS

After pipe for subdrains has been laid, inspected, and approved, filter material shall be placed around and over the pipe to the depth indicated. The filter material shall be placed in layers not to exceed 8 inches thick, and each layer shall be thoroughly compacted by mechanical tampers or rammers to obtain the required density. Compaction of filter material and the placement and compaction of overlying backfill material shall be in accordance with the applicable provisions specified in Section 02316 EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITY SYSTEMS.

3.4 TESTS

3.4.1 Pipe Test

Strength tests of pipe shall conform to field service test requirements of the AASHTO specification covering the product (paragraph PIPE FOR SUBDRAINS).

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02630

STORM-DRAINAGE SYSTEM

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DELIVERY, STORAGE, AND HANDLING
 - 1.3.1 Delivery and Storage
 - 1.3.2 Handling

PART 2 PRODUCTS

- 2.1 PIPE FOR CULVERTS AND STORM DRAINS
 - 2.1.1 Concrete Pipe
- 2.2 DRAINAGE STRUCTURES
 - 2.2.1 Flared End Sections
 - 2.2.2 Precast Reinforced Concrete Box
- 2.3 MISCELLANEOUS MATERIALS
 - 2.3.1 Concrete
 - 2.3.2 Mortar
 - 2.3.3 Precast Concrete Segmental Blocks
 - 2.3.4 Brick
 - 2.3.5 Precast Reinforced Concrete Manholes
 - 2.3.6 Frame and Cover for Gratings
 - 2.3.7 Joints
 - 2.3.7.1 Flexible Watertight Joints
- 2.4 STEEL LADDER
- 2.5 RESILIENT CONNECTORS
- 2.6 HYDROSTATIC TEST ON WATERTIGHT JOINTS
 - 2.6.1 Concrete Pipe

PART 3 EXECUTION

- 3.1 EXCAVATION FOR PIPE CULVERTS, STORM DRAINS, AND DRAINAGE STRUCTURES
 - 3.1.1 Trenching
 - 3.1.2 Removal of Rock
 - 3.1.3 Removal of Unstable Material
- 3.2 BEDDING
 - 3.2.1 Concrete Pipe Requirements
- 3.3 PLACING PIPE
 - 3.3.1 Concrete Pipe
 - 3.3.2 Jacking Pipe Through Fills
- 3.4 JOINTING

- 3.4.1 Concrete Pipe
 - 3.4.1.1 Flexible Watertight Joints
- 3.5 DRAINAGE STRUCTURES
 - 3.5.1 Manholes and Inlets
 - 3.5.2 Walls and Headwalls
- 3.6 STEEL LADDER INSTALLATION
- 3.7 BACKFILLING
 - 3.7.1 Backfilling Pipe in Trenches
 - 3.7.2 Backfilling Pipe in Fill Sections
 - 3.7.3 Movement of Construction Machinery
 - 3.7.4 Compaction
 - 3.7.4.1 General Requirements
 - 3.7.4.2 Minimum Density
 - 3.7.5 Determination of Density
- 3.8 PIPE TESTING

-- End of Section Table of Contents --

SECTION 02630

STORM-DRAINAGE SYSTEM

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 346/346R	(1990) Standard Specification for Cast-in-Place Nonreinforced Concrete Pipe and Recommendations
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AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO HB-16	(1996) Standard Specifications for Highway Bridges
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AASHTO M 198	(1998) Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets
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AMERICAN RAILWAY ENGINEERING & MAINTENANCE-OF-WAY ASSOCIATION (AREMA)

AREMA Manual	(1999) Manual for Railway Engineering (4 Vol.)
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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 123	(1997ael) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
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ASTM A 536	(1999el) Ductile Iron Castings
------------	--------------------------------

ASTM C 14	(1999) Concrete Sewer, Storm Drain, and Culvert Pipe
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ASTM C 32	(1999el) Sewer and Manhole Brick (Made from Clay or Shale)
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ASTM C 55	(1999) Concrete Brick
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ASTM C 62	(1997a) Building Brick (Solid Masonry Units Made from Clay or Shale)
ASTM C 76	(1999) Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C 139	(1999) Concrete Masonry Units for Construction of Catch Basins and Manholes
ASTM C 270	(1997) Mortar for Unit Masonry
ASTM C 443	(1998) Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets
ASTM C 478	(1997) Precast Reinforced Concrete Manhole Sections
ASTM C 655	(1995a) Reinforced Concrete D-Load Culvert, Storm Drain, and Sewer Pipe
ASTM C 789	(1998) Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers
ASTM C 923	(1998) Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Materials
ASTM C 924	(1998) Concrete Pipe Sewer Lines by Low-Pressure Air Test Method
ASTM C 1103	(1994) Joint Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines
ASTM D 1056	(1998) Flexible Cellular Materials - Sponge or Expanded Rubber
ASTM D 1171	(1994) Rubber Deterioration - Surface Ozone Cracking Outdoors or Chamber (Triangular Specimens)
ASTM D 1557	(1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 1751	(1999) Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D 1752	(1984; R 1996e1) Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

ASTM D 2167	(1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2922	(1996el) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(1988; R 1996el) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 3350	(1998a) Polyethylene Plastics Pipe and Fittings Materials

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Placing Pipe;

Printed copies of the manufacturer's recommendations for installation procedures of the material being placed, prior to installation.

SD-07 Certificates

Hydrostatic Test on Watertight Joints;
Determination of Density;
Frame and Cover for Gratings;

Certified copies of test reports demonstrating conformance to applicable pipe specifications, before pipe is installed.
Certification on the ability of frame and cover or gratings to carry the imposed live load.

1.3 DELIVERY, STORAGE, AND HANDLING

1.3.1 Delivery and Storage

Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris. The Contractor shall have a copy of the manufacturer's instructions available at the construction site at all times and shall follow these instructions unless directed otherwise by the Contracting Officer.

1.3.2 Handling

Materials shall be handled in a manner that ensures delivery to the trench in sound, undamaged condition. Pipe shall be carried to the trench, not dragged.

PART 2 PRODUCTS

2.1 PIPE FOR CULVERTS AND STORM DRAINS

Pipe for culverts and storm drains shall be of the sizes indicated and shall conform to the requirements specified.

2.1.1 Concrete Pipe

ASTM C 76, Class III, IV, V, and 5000D as shown on drawings.

2.2 DRAINAGE STRUCTURES

2.2.1 Flared End Sections

ASTM C 76, Class III, IV, and V.

2.2.2 Precast Reinforced Concrete Box

For highway loadings with more 2 feet of cover or more or subjected to dead load only, use ASTM C 789; otherwise, use ASTM C 850.

2.3 MISCELLANEOUS MATERIALS

2.3.1 Concrete

Unless otherwise specified, concrete and reinforced concrete shall conform to the requirements for 4000 psi concrete under Section 03300 CAST-IN-PLACE STRUCTURAL CONCRETE. The concrete mixture shall have air content by volume of concrete, based on measurements made immediately after discharge from the mixer, of 5 to 7 percent. Air content shall be determined in accordance with ASTM C 231. The concrete covering over steel reinforcing shall not be less than 1 inch thick for covers and not less than 1-1/2 inches thick for walls and flooring. Concrete covering deposited directly against the ground shall have a thickness of at least 3 inches between steel and ground. Expansion-joint filler material shall conform to ASTM D 1751, or ASTM D 1752, or shall be resin-impregnated fiberboard conforming to the physical requirements of ASTM D 1752.

2.3.2 Mortar

Mortar for pipe joints, connections to other drainage structures, and brick or block construction shall conform to ASTM C 270, Type M, except that the maximum placement time shall be 1 hour. The quantity of water in the mixture shall be sufficient to produce a stiff workable mortar. Water shall be clean and free of harmful acids, alkalies, and organic impurities.

The mortar shall be used within 30 minutes after the ingredients are mixed with water. The inside of the joint shall be wiped clean and finished

smooth. The mortar head on the outside shall be protected from air and sun with a proper covering until satisfactorily cured.

2.3.3 Precast Concrete Segmental Blocks

Precast concrete segmental block shall conform to ASTM C 139, not more than 8 inches thick, not less than 8 inches long, and of such shape that joints can be sealed effectively and bonded with cement mortar.

2.3.4 Brick

Brick shall conform to ASTM C 62, Grade SW; ASTM C 55, Grade S-I or S-II; or ASTM C 32, Grade MS. Mortar for jointing and plastering shall consist of one part portland cement and two parts fine sand. Lime may be added to the mortar in a quantity not more than 25 percent of the volume of cement. The joints shall be filled completely and shall be smooth and free from surplus mortar on the inside of the structure. Brick structures shall be plastered with 1/2 inch of mortar over the entire outside surface of the walls. For square or rectangular structures, brick shall be laid in stretcher courses with a header course every sixth course. For round structures, brick shall be laid radially with every sixth course a stretcher course.

2.3.5 Precast Reinforced Concrete Manholes

Precast reinforced concrete manholes shall conform to ASTM C 478. Joints between precast concrete risers and tops shall be made with flexible watertight, rubber-type gaskets meeting the requirements of paragraph JOINTS.

2.3.6 Frame and Cover for Gratings

Frame and cover for gratings shall be cast gray iron, ASTM A 48, Class 35B; cast ductile iron, ASTM A 536, Grade 65-45-12; or cast aluminum, ASTM B 26/B 26M, Alloy 356.OT6. Weight, shape, size, and waterway openings for grates and curb inlets shall be as indicated on the plans.

2.3.7 Joints

2.3.7.1 Flexible Watertight Joints

a. Materials: Flexible watertight joints shall be made with plastic or rubber-type gaskets for concrete pipe. The design of joints and the physical requirements for plastic gaskets shall conform to AASHTO M 198, and rubber-type gaskets shall conform to ASTM C 443. Gaskets shall have not more than one factory-fabricated splice, except that two factory-fabricated splices of the rubber-type gasket are permitted if the nominal diameter of the pipe being gasketed exceeds 54 inches.

b. Test Requirements: Watertight joints shall be tested and shall meet test requirements of paragraph HYDROSTATIC TEST ON WATERTIGHT JOINTS. Rubber gaskets shall comply with the oil resistant gasket requirements of ASTM C 443. Certified copies of test results shall be delivered to the Contracting Officer before gaskets or jointing

materials are installed. Alternate types of watertight joint may be furnished, if specifically approved.

2.4 STEEL LADDER

Steel ladder shall be provided. These ladders shall be not less than 16 inches in inside width, with 3/4 inch diameter rungs spaced 12 inches apart. The two stringers shall be a minimum 3/8 inch thick and 2-1/2 inches wide. Ladders and inserts shall be galvanized after fabrication in conformance with ASTM A 123.

2.5 RESILIENT CONNECTORS

Flexible, watertight connectors used for connecting pipe to manholes and inlets shall conform to ASTM C 923.

2.6 HYDROSTATIC TEST ON WATERTIGHT JOINTS

2.6.1 Concrete Pipe

A hydrostatic test shall be made on the watertight joint types as proposed.

Only one sample joint of each type needs testing; however, if the sample joint fails, an additional sample joint shall be tested at the discretion of the Contracting Officer. During the test period, gaskets or other jointing material shall be protected from extreme temperatures which might adversely affect the performance of such materials. Performance requirements for joints in reinforced concrete pipe shall conform to AASHTO M 198 or ASTM C 443.

PART 3 EXECUTION

3.1 EXCAVATION FOR PIPE CULVERTS, STORM DRAINS, AND DRAINAGE STRUCTURES

Excavation of trenches, and for appurtenances and backfilling for culverts and storm drains, shall be in accordance with the applicable portions of Section 02316 EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITY SYSTEMS and Section 02300 EARTHWORK and the requirements specified below.

3.1.1 Trenching

The width of trenches at any point below the top of the pipe shall be not greater than the outside diameter of the pipe plus 24 inches to permit satisfactory jointing and thorough tamping of the bedding material under and around the pipe. Sheet piling and bracing, where required, shall be placed within the trench width as specified. Contractor shall not overexcavate. Where trench widths are exceeded, redesign with a resultant increase in cost of stronger pipe or special installation procedures will be necessary.

Cost of this redesign and increased cost of pipe or installation shall be borne by the Contractor without additional cost to the Government.

3.1.2 Removal of Rock

Rock in either ledge or boulder formation shall be replaced with suitable materials to provide a compacted earth cushion having a thickness between

unremoved rock and the pipe of at least 12 inches or 1/2 inch for each foot of fill over the top of the pipe, whichever is greater, but not more than three-fourths the nominal diameter of the pipe. Where bell-and-spigot pipe is used, the cushion shall be maintained under the bell as well as under the straight portion of the pipe. Rock excavation shall be as specified and defined in Section 02316 EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITY SYSTEMS.

3.1.3 Removal of Unstable Material

Where wet or otherwise unstable soil incapable of properly supporting the pipe, as determined by the Contracting Officer, is unexpectedly encountered in the bottom of a trench, such material shall be removed to the depth required and replaced to the proper grade with select granular material, compacted as provided in Paragraph BACKFILLING. When removal of unstable material is due to the fault or neglect of the Contractor in his performance of shoring and sheeting, water removal, or other specified requirements, such removal and replacement shall be performed at no additional cost to the government.

3.2 BEDDING

The bedding surface for the pipe shall provide a firm foundation of uniform density throughout the entire length of the pipe.

3.2.1 Concrete Pipe Requirements

When no bedding class is specified or detailed on the drawings, concrete pipe shall be bedded in a soil foundation accurately shaped and rounded to conform to the lowest one-fourth of the outside portion of circular pipe or to the lower curved portion of pipe arch for the entire length of the pipe or pipe arch. When necessary, the bedding shall be tamped. Bell holes and depressions for joints shall be not more than the length, depth, and width required for properly making the particular type of joint.

3.3 PLACING PIPE

Each pipe shall be thoroughly examined before being laid; defective or damaged pipe shall not be used. Pipelines shall be laid to the grades and alignment indicated. Proper facilities shall be provided for lowering sections of pipe into trenches. Pipe shall not be laid in water, and pipe shall not be laid when trench conditions or weather are unsuitable for such work. Diversion of drainage or dewatering of trenches during construction shall be provided as necessary.

3.3.1 Concrete Pipe

Laying shall proceed upgrade with spigot ends of bell-and-spigot pipe and tongue ends of tongue-and-groove pipe pointing in the direction of the flow.

3.3.2 Jacking Pipe Through Fills

Methods of operation and installation for jacking pipe through fills shall conform to requirements specified in Volume 1, Chapter 1, Part 4 of AREMA

Manual.

3.4 JOINTING

3.4.1 Concrete Pipe

3.4.1.1 Flexible Watertight Joints

Gaskets and jointing materials shall be as recommended by the particular manufacturer in regard to use of lubricants, cements, adhesives, and other special installation requirements. Surfaces, to receive lubricants, cements, or adhesives shall be clean and dry. Gaskets and jointing materials shall be affixed to the pipe not more than 24 hours prior to the installation of the pipe, and shall be protected from the sun, blowing dust, and other deleterious agents at all times. Gaskets and jointing materials shall be inspected before installing the pipe; any loose or improperly affixed gaskets and jointing materials shall be removed and replaced. The pipe shall be aligned with the previously installed pipe, and the joint pushed home. If, while the joint is being made, the gasket becomes visibly dislocated, the pipe shall be removed and the joint remade.

3.5 DRAINAGE STRUCTURES

3.5.1 Manholes and Inlets

Construction shall be of precast reinforced concrete, complete with frames and covers or gratings; and with fixed galvanized steel ladders. Pipe connections to concrete manholes and inlets shall be made with flexible, watertight connectors.

3.5.2 Walls and Headwalls

Construction shall be as indicated and in accordance with SECTION 03300 CAST-IN-PLACE STRUCTURAL CONCRETE.

3.6 STEEL LADDER INSTALLATION

Ladder shall be adequately anchored to the wall by means of steel inserts spaced not more than 6 feet vertically, and shall be installed to provide at least 6 inches of space between the wall and the rungs. The wall along the line of the ladder shall be vertical for its entire length.

3.7 BACKFILLING

3.7.1 Backfilling Pipe in Trenches

After the pipe has been properly bedded, selected material from excavation or borrow, at a moisture content that will facilitate compaction, shall be placed along both sides of pipe in layers not exceeding 6 inches in compacted depth. The backfill shall be brought up evenly on both sides of pipe for the full length of pipe. The fill shall be thoroughly compacted under the haunches of the pipe. Each layer shall be thoroughly compacted with mechanical tampers or rammers. This method of filling and compacting shall continue until the fill has reached an elevation of at least 12 inches

above the top of the pipe. The remainder of the trench shall be backfilled and compacted by spreading and rolling or compacted by mechanical rammers or tampers in layers not exceeding 12 inches. Tests for density shall be made as necessary to ensure conformance to the compaction requirements specified below. Where it is necessary, in the opinion of the Contracting Officer, that sheeting or portions of bracing used be left in place, the contract will be adjusted accordingly. Untreated sheeting shall not be left in place beneath structures or pavements.

3.7.2 Backfilling Pipe in Fill Sections

For pipe placed in fill sections, backfill material and the placement and compaction procedures shall be as specified below. The fill material shall be uniformly spread in layers longitudinally on both sides of the pipe, not exceeding 6 inches in compacted depth, and shall be compacted by rolling parallel with pipe or by mechanical tamping or ramming. Prior to commencing normal filling operations, the crown width of the fill at a height of 12 inches above the top of the pipe shall extend a distance of not less than twice the outside pipe diameter on each side of the pipe or 12 feet, whichever is less. After the backfill has reached at least 12 inches above the top of the pipe, the remainder of the fill shall be placed and thoroughly compacted in layers not exceeding 12 inches.

3.7.3 Movement of Construction Machinery

When compacting by rolling or operating heavy equipment parallel with the pipe, displacement of or injury to the pipe shall be avoided. Movement of construction machinery over a culvert or storm drain at any stage of construction shall be at the Contractor's risk. Any damaged pipe shall be repaired or replaced.

3.7.4 Compaction

3.7.4.1 General Requirements

Cohesionless materials include gravels, gravel-sand mixtures, sands, and gravelly sands. Cohesive materials include clayey and silty gravels, gravel-silt mixtures, clayey and silty sands, sand-clay mixtures, clays, silts, and very fine sands. When results of compaction tests for moisture-density relations are recorded on graphs, cohesionless soils will show straight lines or reverse-shaped moisture-density curves, and cohesive soils will show normal moisture-density curves.

3.7.4.2 Minimum Density

Backfill over and around the pipe and backfill around and adjacent to drainage structures shall be compacted at the approved moisture content to the following applicable minimum density, which will be determined as specified below.

- a. Under paved roads, including adjacent shoulder areas, the density shall be not less than 90 percent of maximum density for cohesive material and 95 percent of maximum density for cohesionless material, up to the elevation where requirements for pavement

subgrade materials and compaction shall control.

- b. Under unpaved roads, density shall not be less than 90 percent of maximum density for cohesive material and 95 percent of maximum density for cohesionless material.
- c. Under nontraffic areas and levees, density shall be not less than that of the surrounding material.

3.7.5 Determination of Density

Testing shall be the responsibility of the Contractor and performed at no additional cost to the Government. Testing shall be performed by an approved commercial testing laboratory or by the Contractor subject to approval. Tests shall be performed in sufficient number to ensure that specified density is being obtained. Laboratory tests for moisture-density relations shall be made in accordance with ASTM D 1557 except that mechanical tampers may be used provided the results are correlated with those obtained with the specified hand tamper. Field density tests shall be determined in accordance with ASTM D 2167 or ASTM D 2922. When ASTM D 2922 is used, the calibration curves shall be checked and adjusted, if necessary, using the sand cone method as described in paragraph Calibration of the referenced publications. ASTM D 2922 results in a wet unit weight of soil and when using this method ASTM D 3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall be checked along with density calibration checks as described in ASTM D 3017 or ASTM D 2922. Test results shall be furnished the Contracting Officer. The calibration checks of both the density and moisture gauges shall be made at the beginning of a job on each different type of material encountered and at intervals as directed.

3.8 PIPE TESTING

Pipes shall be tested for leakage by low pressure air or water testing or exfiltration tests, as appropriate. Low pressure air testing for concrete pipes shall conform to ASTM C 924. Low pressure air testing procedures for other pipe materials shall use the pressures and testing times prescribed in ASTM C 828 or ASTM C 924, after consultation with the pipe manufacturer.

Testing of individual joints for leakage by low pressure air or water shall conform to ASTM C 1103. Prior to exfiltration tests, the trench shall be backfilled up to at least the lower half of the pipe. If required, sufficient additional backfill shall be placed to prevent pipe movement during testing, leaving the joints uncovered to permit inspection.

Visible leaks encountered shall be corrected regardless of leakage test results. An exfiltration test shall be made by filling the line to be tested with water so that a head of at least 2 feet is provided above both the water table and the top of the pipe at the upper end of the pipeline to be tested. The filled line shall be allowed to stand until the pipe has reached its maximum absorption, but not less than 4 hours. After absorption, the head shall be reestablished. The amount of water required to maintain this water level during a 2-hour test period shall be measured.

Leakage as measured by the exfiltration test shall not exceed 0.2 gallons per inch in diameter per 100 feet of pipeline per hour. When leakage exceeds the maximum amount specified, satisfactory correction shall be made

and retesting accomplished. Testing, correcting, and retesting shall be made at no additional cost to the Government.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02710

TEMPORARY DETOUR AND TRAFFIC CONTROL

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 Exceptions
- 1.3 SUBMITTALS
- 1.4 DETOURS

PART 2 PRODUCTS

- 2.1 MATERIAL

PART 3 EXECUTION

- 3.1 GENERAL

-- End of Section Table of Contents --

SECTION 02710

TEMPORARY DETOUR AND TRAFFIC CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Temporary Detours and Traffic Control used during construction to control flow of traffic around construction activities shall meet the requirements specified in the 2000 Minnesota Department of Transportation (Mn/DOT) Standard Specifications for Construction.

MINNESOTA DEPARTMENT OF TRANSPORTATION (Mn/DOT)

Mn/DOT 1404	Maintenance of Traffic
Mn/DOT 1710	Traffic Control Devices

1.2 Exceptions

Mn/DOT Standard Specifications for Construction referenced above shall be followed for all construction, quality and testing procedures. The Mn/DOT Reference will not be followed when referencing to measurement, payment and deductions of the contract unit price. In addition, all testing will be the responsibility of the Contractor. Any reference in the Mn/DOT Standard Specifications to testing to be done by the Department shall be replaced with testing to be done by the Contractor. Quality Control will be the responsibility of the Contractor. The Contractor will perform quality control, sampling, testing, and inspection during all phases of the work.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Traffic Control Plan; G, COR

Contractor shall submit a traffic control plan to the Contracting Officer seven (7) days prior to the beginning of each stage of

construction. The traffic control plan shall conform to standard plans and detour plans provided, and reference material sited above.

1.4 DETOURS

Traffic detour routes shall conform to those shown in the Plans. Any proposed deviations shall be coordinated with Mn/DOT and the Contracting Officer.

PART 2 PRODUCTS

2.1 MATERIAL

All material and equipment used for traffic control or to construct temporary detours shall meet the requirements of the applicable specification section of the Mn/DOT Standard Specifications for Construction.

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall be responsible for providing traffic control during all phases of construction. This includes but is not limited to signing, striping, traffic detours, watch persons, flaggers, pilot cars, and any necessary precautions for protecting public, workers, and the work. Traffic control devices and placement shall meet the requirements of the traffic control plan details included in the plans and the standards and requirements of Mn/DOT 1404 and Mn/DOT 1710.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02720

AGGREGATE BASE COURSE

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS

PART 2 PRODUCTS

- 2.1 AGGREGATE BASE
 - 2.1.1 Base Course
 - 2.1.2 Shoulders
- 2.2 MATERIAL SOURCES

PART 3 EXECUTION

- 3.1 GENERAL
 - 3.1.1 Definitions
- 3.2 EQUIPMENT
- 3.3 WEATHER LIMITATION
- 3.4 STOCKPILING MATERIAL
- 3.5 PREPARATION OF SUBGRADE
- 3.6 PROOF-ROLLING
- 3.7 GRADE CONTROL
 - 3.7.1 Grade and Cross Section Tolerances
- 3.8 PLACING
- 3.9 COMPACTION
 - 3.9.1 Requirements
 - 3.9.2 Finishing
- 3.10 SMOOTHNESS TEST
- 3.11 THICKNESS CONTROL
- 3.12 TESTING
 - 3.12.1 Sieve Analysis (ASTM C117 and C136)
 - 3.12.2 Correction
- 3.13 MAINTENANCE

-- End of Section Table of Contents --

SECTION 02720

AGGREGATE BASE COURSE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

MINNESOTA DEPARTMENT OF TRANSPORTATION (Mn/DOT)

Mn/DOT 2211	Aggregate Base, Standard Specifications for Construction
Mn/DOT 3138	Aggregates for Surface and Base Course, Standard Specifications for Construction

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 117	(1995) Materials Finer Than 75 micrometer (No. 200 Sieve) in Mineral Aggregates by Washing
ASTM C 136	(1996a) Sieve Analysis of Fine and Coarse Aggregates

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Aggregate Sources; G, COR

Material sources as specified in Paragraph MATERIAL SOURCES.

SD-04 Samples

Aggregate Samples; G, COR

Samples of aggregate as specified in Paragraph MATERIAL SOURCES.

SD-06 Test Reports

Testing

Testing results as specified in Paragraph TESTING.

PART 2 PRODUCTS

2.1 AGGREGATE BASE

2.1.1 Base Course

Conform to Mn/DOT 3138, Class 5, 100% crushed.

2.1.2 Shoulders

Conform to Mn/DOT 3138, Class 1, shouldering aggregate.

2.2 MATERIAL SOURCES

It shall be the responsibility of the Contractor to make its own investigations for a source of suitable materials and to make its own arrangements with the owners of the pits for procuring the required quantity of suitable material. The Contractor shall designate in writing only one source or one combination of sources from which it proposes to furnish aggregate. A 50 pound sample shall be provided to the Contracting Officer. Approval of samples from a source of aggregate is not to be construed as approval of all materials from that source. The right is reserved to reject materials from certain localized areas, zones, strata, or channels when such materials are unsuitable for aggregate as determined by the Contracting Officer. Materials produced from an approved source shall meet all the requirements of this section.

PART 3 EXECUTION

3.1 GENERAL

Aggregate base course shall be constructed in accordance with the requirements of the referenced state standard specification sections unless specified otherwise.

3.1.1 Definitions

The term "Engineer" referenced in the state standard specifications shall mean the Contracting Officer.

3.2 EQUIPMENT

All plant, equipment, and tools used in the performance of the work will be subject to approval and shall be maintained in satisfactory working condition at all times. The equipment shall meet the requirements of the referenced state standard specification sections. The base course shall be compacted using a steel-wheeled roller, vibratory smooth drum roller, pneumatic-tired roller, unless other special compaction equipment is

approved.

3.3 WEATHER LIMITATION

Base courses shall be placed when the atmospheric temperature is above 35 degrees F. Base shall not be constructed on subgrades that are frozen or contain frost. Areas of completed base course that are damaged by freezing, rainfall, or other weather conditions shall be corrected to meet specified requirements.

3.4 STOCKPILING MATERIAL

Prior to stockpiling of material, storage sites shall be cleared and leveled by the Contractor. Materials obtained from different sources shall be stockpiled separately.

3.5 PREPARATION OF SUBGRADE

Prior to constructing the aggregate base course, the subgrade shall be cleaned of all foreign substances. Ruts or soft, yielding spots in the subgrade, areas having inadequate compaction, and deviations of the surface from the requirements specified shall be corrected by loosening and removing soft or unsatisfactory material and by adding satisfactory material with a consistency and texture similar to the surrounding subgrade, reshaping to line and grade, and recompact to specified density requirements. The finished subgrade shall not be disturbed by traffic or other operations and shall be maintained by the Contractor in a satisfactory condition until the base course is placed.

3.6 PROOF-ROLLING

The subgrade shall be proof-rolled prior to placing aggregate base. Proof-rolling shall be scheduled at a time when the Contracting Officer can observe, unless waived. Proof-rolling shall be accomplished within the limits of the work by passing a loaded 25 ton dump truck or rubber tired heavy equipment over the entire subgrade at a slow rate of speed. Proof-rolling shall be observed by a qualified observer not riding in the vehicle. Soft or loose areas identified by the proof-rolling and occurring in previously placed fill shall be tested for compaction where directed by the Contracting Officer. Isolated areas of soft cohesive soils shall be subcut and replaced with satisfactory fill of a texture similar to surrounding subgrade soil. Loose zones of non-saturated granular soil shall be compacted. The Contracting officer has the option to direct subgrade correction. Payment will be authorized for subgrade correction of native soils identified as suitable subgrade material in the project documents. Such payment or schedule changes will be negotiated in accordance with Contract Clause CHANGES. Correction of fill soils not meeting compaction specifications shall be corrected at the Contractor's expense.

3.7 GRADE CONTROL

During construction, the lines and grades, including crown and cross slope indicated for the base course, shall be maintained by means of line and

grade stakes placed by the Contractor. Grade stakes shall be in lines parallel to the centerline of the area under construction and suitably spaced for string lining. The Contractor may use an approved laser system in lieu of a grade stake system. Adequate drainage shall be provided during the entire period of construction to prevent water from collecting or standing on the area to be constructed.

3.7.1 Grade and Cross Section Tolerances

Subgrade. 0.05 foot above or below prescribed elevation.

Base Courses. 0.05 foot below prescribed elevation.

3.8 PLACING

The mixed material shall be placed on the prepared subgrade or subbase in loose lifts not exceeding 6 inches in thickness. The layers, when compacted, shall be true to the grades or levels required, with the least possible surface disturbance. If base course becomes contaminated by traffic or sedimentation, the surface shall be cleaned prior to completing subsequent work by sweeping with power sweepers, power brooms, or hand brooms.

3.9 COMPACTION

3.9.1 Requirements

Each layer shall be compacted until there is no further evidence of consolidation. Water shall be applied to the base material during the mixing, spreading, and compacting operations when and in the quantities the Contracting Officer considers necessary for proper compaction.

3.9.2 Finishing

The surface of the top layer shall be finished to grade and cross section shown. Finished surface shall be of uniform texture. Light blading during compaction may be necessary for the finished surface to conform to the lines, grades, and cross sections. Should the surface for any reason become rough, corrugated, uneven in texture, or traffic marked prior to completion, such unsatisfactory portion shall be scarified, reworked, or replaced as directed.

3.10 SMOOTHNESS TEST

The surface of the top layer shall not deviate more than 1/2 inch when tested with a 10 foot straightedge applied parallel with and at right angles to the centerline of the area to be paved. Deviations exceeding 1/2 inch shall be corrected.

3.11 THICKNESS CONTROL

The thickness of the base course shall be measured at intervals of one measurement for at least each 500 square yards of base course. The depth measurement shall be made by test holes at least 3 inches in diameter. The

work shall be scheduled when the Contracting Officer can observe the testing; and the Contracting Officer shall select the locations of the test holes, unless waived.

3.12 TESTING

The following tests shall be performed by and at the expense of the Contractor. Samples shall be taken when and where directed. Tests of materials not meeting the requirements specified will not be counted as part of the required tests. Copies of test results shall be submitted to the Contracting Officer.

3.12.1 Sieve Analysis (ASTM C117 and C136)

Aggregate Base. One test prior to placing or hauling and one test per 250 cy or fraction thereof (in place measure)

3.12.2 Correction

When any source of materials is changed or deficiencies are found, the initial analysis shall be repeated and the material already placed shall be retested to determine the extent of unacceptable material. All in-place unacceptable material shall be replaced.

3.13 MAINTENANCE

The base course shall be maintained in a condition that will meet specification requirements until accepted.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02741

HOT-MIX ASPHALT (HMA) FOR ROADS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 DESCRIPTION OF WORK
- 1.3 DEFINITIONS
- 1.4 SUBMITTALS
- 1.5 ASPHALT MIXING PLANT
- 1.6 HAULING EQUIPMENT
- 1.7 ASPHALT PAVERS
 - 1.7.1 Receiving Hopper
- 1.8 ROLLERS
- 1.9 WEATHER LIMITATIONS

PART 2 PRODUCTS

- 2.1 AGGREGATES
 - 2.1.1 Aggregate Gradation
- 2.2 ASPHALT CEMENT BINDER
- 2.3 MIX DESIGN
 - 2.3.1 JMF Requirements
 - 2.3.2 Adjustments to Field JMF
 - 2.3.3 Documentation
- 2.4 MIXTURE QUALITY MANAGMENT

PART 3 EXECUTION

- 3.1 GENERAL
- 3.2 PAVEMENT DENSITY
 - 3.2.1 Maximum Density Method
 - 3.2.2 Ordinary Compaction
 - 3.2.2.1 Temperature
- 3.3 THICKNESS AND SURFACE SMOOTHNESS REQUIREMENTS
- 3.4 PREPARATION OF THE UNDERLYING SURFACE
- 3.5 TESTING LABORATORY
- 3.6 TRANSPORTING AND PLACING
 - 3.6.1 Transporting
- 3.7 CONTRACTOR QUALITY CONTROL
 - 3.7.1 General Quality Control Requirements
 - 3.7.2 Quality Control Testing
 - 3.7.2.1 QC Monitoring
 - 3.7.3 Sampling

- 3.8 MATERIAL ACCEPTANCE AND PERCENT PAYMENT
 - 3.8.1 Percent Payment
 - 3.8.2 Sublot Sampling
 - 3.8.3 Additional Sampling and Testing
 - 3.8.4 Grade
 - 3.8.5 Surface Smoothness
 - 3.8.5.1 Smoothness Requirements
 - 3.8.5.2 Testing Method
 - 3.8.5.3 Payment Adjustment for Smoothness

-- End of Section Table of Contents --

SECTION 02741

HOT-MIX ASPHALT (HMA) FOR ROADS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

MINNESOTA DEPARTMENT OF TRANSPORTATION (Mn/DOT)

Mn/DOT 2350	Plant Mixed Asphalt Pavement
Mn/DOT 2357	Bituminous Tack Coat
Mn/DOT 2358	Bituminous Prime Coat
Mn/DOT 2360	SuperPave Hot Mix Asphalt
Mn/DOT 3139	Graded Aggregated for Bituminous Mixture
Mn/DOT 3151	Bituminous Material

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO MP 1	(1998) Provisional Specification for Performance Graded Asphalt Binder
AASHTO MP 2	(1998; Interim 1999) Superpave Volumetric Mix Design
AASHTO T11	
AASHTO T27	
AASHTO T84	
AASHTO T85	
AASHTO T166	
AASHTO T209	

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 1252	(1998) Uncompacted Void Content of Fine Aggregate (as Influenced by Particle Shape, Surface Texture, and Grading)
ASTM D 3665	(1999) Random Sampling of Construction Materials
ASTM D 4867/D 4867M	(1996) Effect of Moisture on Asphalt Concrete Paving Mixtures
ASTM D 5821	Course Aggregate Angularity

ASPHALT INSTITUTE (AI)

AI MS-2	(1997) Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types
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U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 171	(1995) Test Method for Determining Percentage of Crushed Particles in Aggregate
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1.2 DESCRIPTION OF WORK

The work shall consist of pavement courses composed of mineral aggregate and asphalt material heated and mixed in a central mixing plant and placed on a prepared course. HMA designed and constructed in accordance with this section shall conform to the lines, grades, thicknesses, and typical cross sections shown on the drawings. Each course shall be constructed to the depth, section, or elevation required by the drawings and shall be rolled, finished, and approved before the placement of the next course.

1.3 DEFINITIONS

The term "Engineer" referenced in Mn/DOT Standard Specification for Construction shall mean the "Contracting Officer."

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Mix Design; G, AE.

Proposed Job Mix Formula.

SD-04 Samples

Asphalt Cement Binder; G.

(5 gallon) sample for mix design verification.

Aggregates; G.

Sufficient materials to produce 200 lb of blended mixture for mix design verification.

SD-06 Test Reports

Aggregates; G, COR.

QC Monitoring; G.

Aggregate and QC test results.

SD-07 Certificates

Asphalt Cement Binder; G.

Copies of certified test data.

Testing Laboratory; G.

Certification of compliance.

Plant Scale Calibration Certification

1.5 ASPHALT MIXING PLANT

Plants used for the preparation of hot-mix asphalt shall conform to the requirements of Mn/DOT 2350.4 with the following changes:

a. Truck Scales. The asphalt mixture shall be weighed on approved certified scales at the Contractor's expense. Scales shall be inspected and sealed at least annually by an approved calibration laboratory.

b. Testing Facilities. The Contractor shall provide laboratory facilities at the plant for the use of the Government's acceptance testing and the Contractor's quality control testing.

c. Inspection of Plant. The Contracting Officer shall have access at all times, to all areas of the plant for checking adequacy of equipment; inspecting operation of the plant; verifying weights, proportions, and material properties; checking the temperatures maintained in the preparation of the mixtures and for taking samples. The Contractor shall provide assistance as requested, for the Government to procure any desired samples.

d. Storage Bins. Use of storage bins for temporary storage of hot-mix asphalt will be permitted as follows:

(1) The asphalt mixture may be stored in non-insulated storage

bins for a period of time not exceeding 3 hours.

(2) The asphalt mixture may be stored in insulated storage bins for a period of time not exceeding 8 hours. The mix drawn from bins shall meet the same requirements as mix loaded directly into trucks.

1.6 HAULING EQUIPMENT

Trucks used for hauling hot-mix asphalt shall have tight, clean, and smooth metal beds. To prevent the mixture from adhering to them, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other approved material. Petroleum based products shall not be used as a release agent. Each truck shall have a suitable cover to protect the mixture from adverse weather. When necessary to ensure that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated or heated and covers (tarps) shall be securely fastened.

1.7 ASPHALT PAVERS

Asphalt pavers shall be self-propelled, with an activated screed, heated as necessary, and shall be capable of spreading and finishing courses of hot-mix asphalt which will meet the specified thickness, smoothness, and grade. The paver shall have sufficient power to propel itself and the hauling equipment without adversely affecting the finished surface. Additionally, the requirements of Mn/DOT 2350.4 will apply.

1.7.1 Receiving Hopper

The paver shall have a receiving hopper of sufficient capacity to permit a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed without segregation. The screed shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture.

1.8 ROLLERS

Rollers shall be in good condition and shall be operated at slow speeds to avoid displacement of the asphalt mixture. The number, type, and weight of rollers shall be sufficient to compact the mixture to the required density while it is still in a workable condition. Equipment which causes excessive crushing of the aggregate shall not be used.

1.9 WEATHER LIMITATIONS

The hot-mix asphalt shall not be placed upon a wet surface or when the surface temperature of the underlying course is less than specified in Table 1. The temperature requirements may be waived by the Contracting Officer, if requested; however, all other requirements, including compaction, shall be met.

Table 1. Surface Temperature Limitations of Underlying Course

Mat Thickness, inches	Degrees F
3 or greater	40
Less than 3	45

PART 2 PRODUCTS

2.1 AGGREGATES

Aggregates shall conform to the requirements of Mn/DOT 2360, consisting of crushed stone, crushed gravel, crushed slag, screenings, natural sand and mineral filler, as required. The portion of material retained on the No. 4 sieve is coarse aggregate. The portion of material passing the No. 4 sieve and retained on the No. 200 sieve is fine aggregate. The portion passing the No. 200 sieve is defined as mineral filler. All aggregate test results and samples shall be submitted to the Contracting Officer at least 14 days prior to start of construction.

2.1.1 Aggregate Gradation

The combined aggregate gradation shall conform to gradations specified in Mn/DOT 2360 and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve or vice versa, but grade uniformly from coarse to fine.

2.2 ASPHALT CEMENT BINDER

Asphalt cement binder shall conform to AASHTO MP-1 as specified in Mn/DOT 2360. Test data indicating grade certification shall be provided by the supplier at the time of delivery of each load to the mix plant. Copies of these certifications shall be submitted to the Contracting Officer. The supplier is defined as the last source of any modification to the binder. The Contracting Officer may sample and test the binder at the mix plant at any time before or during mix production. Samples of the asphalt cement specified shall be submitted for approval not less than 14 days before start of the test section.

2.3 MIX DESIGN

The Contractor shall develop the mix design and meet the mixture requirements of Mn/DOT 2360, AASHTO TP-4, and the Asphalt Institute's Superpave Mix Design Manual SP-2.

The contractor may use a DOT superpave hot mix in lieu of developing a new superpave hot mix design study as described herein. The superpave volumetric mix shall be designed in accordance with AASHTO MP 2 and Mn/DOT 2360.

2.3.1 JMF Requirements

The job mix formula shall be submitted in writing by the Contractor for approval at least 14 days prior to the start of the test section and shall

meet the requirements of Mn/DOT 2360.2.F.

2.3.2 Adjustments to Field JMF

The Laboratory JMF for each mixture shall be in effect until a new formula is approved in writing by the Contracting Officer. Should a change in sources of any materials be made, a new laboratory JMF design shall be performed and a new JMF approved before the new material is used. The Contractor will be allowed to adjust the Laboratory JMF within the limits specified below to optimize mix volumetric properties with the approval of the Contracting Officer. Adjustments to the Laboratory JMF shall be applied to the field (plant) established JMF and limited to those values as shown. Adjustments shall be targeted to produce or nearly produce 4 percent voids total mix (VTM).

TABLE 4. Field (Plant) Established JMF Tolerances
Sieves Adjustments (plus or minus), percent

No. 4	3
No. 8	3
No. 200	1
Binder Content	0.40

If adjustments are needed that exceed these limits, a new mix design shall be developed. Tolerances given above may permit the aggregate grading to be outside the limits shown in Table 2; while not desirable, this is acceptable.

2.3.3 Documentation

Mix design documentation shall be provided in accordance with Mn/DOT 2360.

2.4 MIXTURE QUALITY MANAGMENT

All quality requirements outlined in Mn/DOT 2360 shall be met as specified, including quality control, quality assurance, sampling and testing, and documentation.

PART 3 EXECUTION

3.1 GENERAL

Bituminous pavement operations shall not begin until approval of the mixture for each course.

3.2 PAVEMENT DENSITY

All pavements will be consturcted in accordance with the Maximum Density Method unless otherwise specified. Compaction of leveling layers less than 1.5 inches, thin lift leveling, wedging layers, patching layers, driveways, areas which cannot be compacted with standard highway construion equipment, will be accomplished according to the Ordinary Compaction procedure described in Mn/DOT 2360.

3.2.1 Maximum Density Method

Maximum density shall be according to the requirements of Mn/DOT 2360.5.

3.2.2 Ordinary Compaction

This compaction method shall not be used on mainline paving. Test strips shall be done in accordance with the requirements of Mn/DOT 2360.5.

3.2.2.1 Temperature

Table 2360-17 of Mn/DOT 2360.5 shall dictate the allowable mixture temperatures for ordinary compaction.

3.3 THICKNESS AND SURFACE SMOOTHNESS REQUIREMENTS

Thickness and surface smoothness requirements will meet the standards of Mn/DOT 2360.6, including profilograph testing and profile indexing.

3.4 PREPARATION OF THE UNDERLYING SURFACE

Immediately before placing the hot mix asphalt, the underlying course shall be cleaned of dust and debris. A prime coat and/or tack coat shall be applied in accordance with Mn/DOT 2357, Mn/DOT 2358 and the contract specifications.

3.5 TESTING LABORATORY

The laboratory used to develop the JMF shall meet the requirements of ASTM D 3666 and Mn/DOT 2350. A certification signed by the manager of the laboratory stating that it meets these requirements or clearly listing all deficiencies shall be submitted to the Contracting Officer prior to the start of construction. The certification shall contain as a minimum:

- a. Qualifications of personnel; laboratory manager, supervising technician, and testing technicians.
- b. A listing of equipment to be used in developing the job mix.
- c. A copy of the laboratory's quality control system.
- d. Evidence of participation in the AASHTO Materials Reference Laboratory (AMRL) program.

3.6 TRANSPORTING AND PLACING

3.6.1 Transporting

The hot-mix asphalt shall be transported from the mixing plant to the site in clean, tight vehicles. Deliveries shall be scheduled so that placing and compacting of mixture is uniform with minimum stopping and starting of the paver. Adequate artificial lighting shall be provided for night placements. Hauling over freshly placed material will not be permitted until the material has been compacted as specified, and allowed to cool to

140 degrees F.

3.7 CONTRACTOR QUALITY CONTROL

3.7.1 General Quality Control Requirements

The Contractor shall develop an approved Quality Control Plan in accordance with Mn/DOT 2360 requirements and the provisions of Section 01451 CONTRACTOR QUALITY CONTROL. The Quality Control requirements referenced and outlined within this Section are specific to the use of a Superpave mix and will be required in addition to the other Contract quality requirements. Hot-mix asphalt for payment shall not be produced until the quality control plan has been approved.

3.7.2 Quality Control Testing

The Contractor shall perform all quality control tests applicable to these specifications, contained with Mn/DOT 2360, and as set forth in the Quality Control Program. The testing program shall include, but shall not be limited to, tests for the control of asphalt content, aggregate gradation, temperatures, aggregate moisture, moisture in the asphalt mixture, laboratory air voids, stability, flow, in-place density, grade and smoothness. A Quality Control Testing Plan shall be developed as part of the Quality Control Program.

3.7.2.1 QC Monitoring

The Contractor shall submit all QC test results to the Contracting Officer on a daily basis as the tests are performed. The Contracting Officer reserves the right to monitor any of the Contractor's quality control testing and to perform duplicate testing as a check to the Contractor's quality control testing.

3.7.3 Sampling

When directed by the Contracting Officer, the Contractor shall sample and test any material which appears inconsistent with similar material being produced, unless such material is voluntarily removed and replaced or deficiencies corrected by the Contractor. All sampling shall be in accordance with standard procedures specified.

3.8 MATERIAL ACCEPTANCE AND PERCENT PAYMENT

Testing for acceptability of work will be performed by an independent laboratory hired by the Contractor. Test results and payment calculations shall be forwarded daily to the Contracting Officer. Acceptance of the plant produced mix and in-place requirements will be on a lot to lot basis.

A standard lot for all requirements will be equal to 8 hours of production. Where appropriate, adjustment in payment for individual lots of hot-mix asphalt will be made based on in-place density, laboratory air voids, grade and smoothness in accordance with the following paragraphs. Grade and surface smoothness determinations will be made on the lot as a whole. Exceptions or adjustments to this will be made in situations where the mix within one lot is placed as part of both the intermediate and

surface courses, thus grade and smoothness measurements for the entire lot cannot be made. In order to evaluate laboratory air voids and in-place (field) density, each lot will be divided into four equal sublots.

3.8.1 Percent Payment

When a lot of material fails to meet the specification requirements for 100 percent pay as outlined in the following paragraphs, that lot shall be removed and replaced, or accepted at a reduced price which will be computed by multiplying the unit price by the lot's pay factor. The lot pay factor is determined by taking the lowest computed pay factor based on either laboratory air voids, in-place density, grade or smoothness (each discussed below). At the end of the project, an average of all lot pay factors will be calculated. If this average lot pay factor exceeds 95.0 percent, then the percent payment for the entire project will be 100 percent of the unit bid price. If the average lot pay factor is less than 95.0 percent, then each lot will be paid for at the unit price multiplied by the lot's pay factor. For any lots which are less than 2000 tons, a weighted lot pay factor will be used to calculate the average lot pay factor.

3.8.2 Sublot Sampling

One random mixture sample for determining laboratory air voids, theoretical maximum density, and for any additional testing the Contracting Officer desires, will be taken from a loaded truck delivering mixture to each sublot, or other appropriate location for each sublot. All samples will be selected randomly, using commonly recognized methods of assuring randomness conforming to ASTM D 3665 and employing tables of random numbers or computer programs. Laboratory air voids will be determined from three laboratory compacted specimens of each sublot sample in accordance with ASTM D 1559. The specimens will be compacted within 2 hours of the time the mixture was loaded into trucks at the asphalt plant. Samples will not be reheated prior to compaction and insulated containers will be used as necessary to maintain the temperature.

3.8.3 Additional Sampling and Testing

The Contracting Officer reserves the right to direct additional samples and tests for any area which appears to deviate from the specification requirements. The cost of any additional testing will be paid for by the Government. Testing in these areas will be in addition to the lot testing, and the requirements for these areas will be the same as those for a lot.

3.8.4 Grade

The final wearing surface of pavement shall conform to the elevations and cross sections shown and shall vary not more than 0.05 foot from the plan grade established and approved at site of work. Finished surfaces at juncture with other pavements shall coincide with finished surfaces of abutting pavements. Deviation from the plan elevation will not be permitted in areas of pavements where closer conformance with planned elevation is required for the proper functioning of drainage and other appurtenant structures involved. The final wearing surface of the pavement will be tested for conformance with specified plan grade requirements. The

grade will be determined by running lines of levels at intervals of 25 feet, or less, longitudinally and transversely, to determine the elevation of the completed pavement surface. Within 5 working days, after the completion of a particular lot incorporating the final wearing surface, the Contracting Officer will inform the Contractor in writing, of the results of the grade-conformance tests. When more than 5 percent of all measurements made within a lot are outside the 0.05 foot tolerance, the pay factor based on grade for that lot will be 95 percent. In areas where the grade exceeds the tolerance by more than 50 percent, the Contractor shall remove the surface lift full depth; the Contractor shall then replace the lift with hot-mix asphalt to meet specification requirements, at no additional cost to the Government. Diamond grinding may be used to remove high spots to meet grade requirements. Skin patching for correcting low areas or planing or milling for correcting high areas will not be permitted.

3.8.5 Surface Smoothness

The Contractor shall use one of the following methods to test and evaluate surface smoothness of the pavement. All testing shall be performed in the presence of the Contracting Officer. Detailed notes of the results of the testing shall be kept and a copy furnished to the Government immediately after each day's testing. The profilograph method shall be used for all longitudinal and transverse testing, except where the runs would be less than 200 feet in length and the ends where the straightedge shall be used. Where drawings show required deviations from a plane surface (crowns, drainage inlets, etc.), the surface shall be finished to meet the approval of the Contracting Officer.

3.8.5.1 Smoothness Requirements

a. Straightedge Testing: The finished surfaces of the pavements shall have no abrupt change of 1/4 inch or more, and all pavements shall be within the tolerances specified in Table 9 when checked with an approved 12 foot straightedge.

Table 9. Straightedge Surface Smoothness--Pavements

<u>Pavement Category</u>	<u>Direction of Testing</u>	<u>Tolerance, inches</u>
-----	-----	-----
All	Longitudinal	1/4
paved areas	Transverse	1/4

b. Profilograph Testing: The finished surfaces of the pavements shall have no abrupt change of 1/8 inch or more, and all pavement shall have a Profile Index not greater than specified in Table 10 when tested with an approved California-type profilograph. If the extent of the pavement in either direction is less than 200 feet, that direction shall be tested by the straightedge method and shall meet requirements specified above.

Table 10. Profilograph Surface Smoothness--Pavements

Pavement Category	Direction of Testing	Maximum Specified Profile Index (inch/mile)
-----	-----	-----
All Paved Areas	Longitudinal	9

3.8.5.2 Testing Method

After the final rolling, but not later than 24 hours after placement, the surface of the pavement in each entire lot shall be tested by the Contractor in such a manner as to reveal all surface irregularities exceeding the tolerances specified above. Separate testing of individual sublots is not required. If any pavement areas are ground, these areas shall be retested immediately after grinding. The entire area of the pavement shall be tested in both a longitudinal and a transverse direction on parallel lines. The transverse lines shall be 25 feet or less apart, as directed. The longitudinal lines shall be at the centerline of each paving lane for lines less than 20 feet and at the third points for lanes 20 feet or greater. Other areas having obvious deviations shall also be tested. Longitudinal testing lines shall be continuous across all joints.

a. Straightedge Testing. The straightedge shall be held in contact with the surface and moved ahead one-half the length of the straightedge for each successive measurement. The amount of surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between these two high points.

b. Profilograph Testing. Profilograph testing shall be performed using approved equipment and procedures described in CDT Test 526. The equipment shall utilize electronic recording and automatic computerized reduction of data to indicate "must-grind" bumps and the Profile Index for the pavement. The "blanking band" shall be 0.2 inches wide and the "bump template" shall span 1 inch with an offset of 0.4 inch. The profilograph shall be operated by an approved, factory-trained operator on the alignments specified above. A copy of the reduced tapes shall be furnished the Government at the end of each day's testing.

3.8.5.3 Payment Adjustment for Smoothness

a. Straightedge Testing. Location and deviation from straightedge for all measurements shall be recorded. When between 5.0 and 10.0 percent of all measurements made within a lot exceed the tolerance specified in paragraph Smoothness Requirements above, after any reduction of high spots or removal and replacement, the computed pay factor for that lot based on surface smoothness, will be 95 percent. When more than 10.0 percent of all measurements exceed the tolerance, the computed pay factor will be 90 percent. When between 15.0 and 20.0 percent of all measurements exceed the tolerance, the computed pay factor will be 75 percent. When 20.0 percent or more of the measurements exceed the tolerance, the lot shall be removed and replaced at no additional cost to the Government. Regardless of the

above, any small individual area with surface deviation which exceeds the tolerance given above by more than 50 percent, shall be corrected by diamond grinding to meet the specification requirements above or shall be removed and replaced at no additional cost to the Government.

b. Profilograph Testing. Location and data from all profilograph measurements shall be recorded. When the Profile Index of a lot exceeds the tolerance specified in paragraph Smoothness Requirements above by 1.0 inch/mile, but less than 2.0 inches/mile, after any reduction of high spots or removal and replacement, the computed pay factor for that lot based on surface smoothness will be 95 percent. When the Profile Index exceeds the tolerance by 2.0 inches/mile, but less than 3.0 inches/mile, the computed pay factor will be 90 percent. When the Profile Index exceeds the tolerance by 3.0 inches/mile, but less than 4.0 inches/mile, the computed pay factor will be 75 percent. When the Profile Index exceeds the tolerance by 4.0 inches/mile or more, the lot shall be removed and replaced at no additional cost to the Government. Regardless of the above, any small individual area with surface deviation which exceeds the tolerance given above by more than 5.0 inches/mile or more, shall be corrected by grinding to meet the specification requirements above or shall be removed and replaced at no additional cost to the Government.

c. Bumps ("Must Grind" Areas). Any bumps ("must grind" areas) shown on the profilograph trace which exceed 0.4 inch in height shall be reduced by diamond grinding until they do not exceed 0.3 inch when retested. Such grinding shall be tapered in all directions to provide smooth transitions to areas not requiring grinding. The following will not be permitted: (1) skin patching for correcting low areas, (2) planing or milling for correcting high areas. At the Contractor's option, pavement areas, including ground areas, may be rechecked with the profilograph in order to record a lower Profile Index.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02748

BITUMINOUS TACK AND PRIME COATS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 DEFINITIONS
- 1.3 SUBMITTALS
- 1.4 PLANT, EQUIPMENT, MACHINES AND TOOLS
 - 1.4.1 General Requirements
 - 1.4.2 Bituminous Distributor
 - 1.4.3 Power Brooms and Power Blowers
- 1.5 WEATHER LIMITATIONS

PART 2 PRODUCTS

- 2.1 TACK COAT
- 2.2 PRIME COAT

PART 3 EXECUTION

- 3.1 PREPARATION OF SURFACE
- 3.2 APPLICATION RATE
- 3.3 APPLICATION TEMPERATURE
 - 3.3.1 Temperature Ranges
- 3.4 APPLICATION
 - 3.4.1 General
 - 3.4.2 Prime Coat
 - 3.4.3 Tack Coat
- 3.5 CURING PERIOD
- 3.6 FIELD QUALITY CONTROL

-- End of Section Table of Contents --

SECTION 02748

BITUMINOUS TACK AND PRIME COATS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

MINNESOTA DEPARTMENT OF TRANSPORTATION (Mn/DOT)

Mn/DOT 2321	Road Mixed Bituminous Surface
Mn/DOT 2357	Bituminous Tack Coat
Mn/DOT 2358	Bituminous Prime Coat
Mn/DOT 3151	Bituminous Materials

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 20	(1970; R 1996) Penetration Graded Asphalt Cement
AASHTO M 81	(1992; R 1996) Cut-Back Asphalt (Rapid-Curing Type)
AASHTO M 82	(1975; R 1996) Cut-Back Asphalt (Medium-Curing Type)
AASHTO M 226	(1980; R 1996) Viscosity Graded Asphalt Cement
AASHTO T 40	(1978; R 1996) Sampling Bituminous Materials

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 140	(200) Sampling Bituminous Materials
ASTM D 946	(1982; R 1999) Penetration-Graded Asphalt Cement for Use in Pavement Construction
ASTM D 977	(1998) Emulsified Asphalt

ASTM D 1250	(1980; R 1997el) Petroleum Measurement Tables
ASTM D 2026	(1972; R 1997) Cutback Asphalt (Slow-Curing Type)
ASTM D 2027	(1976; R 1997) Cutback Asphalt (Medium-Curing Type)
ASTM D 2028	(1976; R 1997) Cutback Asphalt (Rapid-Curing Type)
ASTM D 2397	(1998) Cationic Emulsified Asphalt
ASTM D 2995	(1999) Determining Application Rate of Bituminous Distributors
ASTM D 3381	(1992; R 1999) Viscosity-Graded Asphalt Cement for Use in Pavement Construction

1.2 DEFINITIONS

The term "Engineer" referenced in Mn/DOT Standard Specification for Construction shall mean the "Contracting Officer."

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Product and Data Sheet; G, COR

Provide applicable product data and information.

1.4 PLANT, EQUIPMENT, MACHINES AND TOOLS

1.4.1 General Requirements

Plant, equipment, machines and tools used in the work shall be subject to approval and shall be maintained in a satisfactory working condition at all times.

1.4.2 Bituminous Distributor

The distributor shall meet the requirements of Mn/DOT 2321.3C1.

1.4.3 Power Brooms and Power Blowers

Power brooms and power blowers shall be suitable for cleaning the surfaces to which the bituminous coat is to be applied.

1.5 WEATHER LIMITATIONS

Bituminous coat shall be applied only when the surface to receive the bituminous coat is dry. Bituminous coat shall be applied only when the atmospheric temperature in the shade is 50 degrees F or above and when the temperature has not been below 35 degrees F for the 12 hours prior to application.

PART 2 PRODUCTS

2.1 TACK COAT

Tack coat materials should conform to Mn/DOT 2357.

2.2 PRIME COAT

Prime coat materials should conform to Mn/DOT 2358.

PART 3 EXECUTION

3.1 PREPARATION OF SURFACE

Immediately before applying the bituminous coat, all loose material, dirt, clay, or other objectionable material shall be removed from the surface to be treated. The surface shall be dry and clean at the time of treatment. All necessary repairs or reconditioning work shall have been completed as provided for in the Contract

3.2 APPLICATION RATE

Application rates for the tack and prime coats should conform to Mn/DOT 2357 and Mn/DOT 2358 respectively.

3.3 APPLICATION TEMPERATURE

3.3.1 Temperature Ranges

Application temperatures for the tack and prime coats should conform to Mn/DOT 2357 and Mn/DOT 2358 respectively.

3.4 APPLICATION

3.4.1 General

Following preparation and subsequent inspection of the surface, the bituminous coat shall be applied at the specified rate with uniform distribution over the surface to be treated. All areas and spots missed by the distributor shall be properly treated with the hand spray. Until the succeeding layer of pavement is placed, the surface shall be maintained by protecting the surface against damage and by repairing deficient areas at no additional cost to the Government. If required, clean dry sand shall be

spread to effectively blot up any excess bituminous material. No smoking, fires, or flames other than those from the heaters that are a part of the equipment shall be permitted within 25 feet of heating, distributing, and transferring operations of bituminous material other than bituminous emulsions. All traffic, except for paving equipment used in constructing the surfacing, shall be prevented from using the underlying material, whether primed or not, until the surfacing is completed. The bituminous coat shall conform to all requirements as described herein.

3.4.2 Prime Coat

The prime coat will be required if it will be at least seven days before a the surfacing (Asphalt cement hot mix concrete) layer is constructed on the underlying (base course, etc) compacted material. The type of liquid asphalt and application rate will be as specified herein. The Contractor shall protect the underlying from any damage (water, traffic, etc.) until the surfacing is placed. If the Contractor places the surfacing within seven days, the choice of protection measures or actions to be taken is at the Contractor's option. Damage to the underlying material caused by lack of, or inadequate, protection shall be repaired (recompacted or replaced) by approved methods at no additional cost to the Government. If the Contractor options to use the prime coat, it shall be applied as soon as possible after consolidation of the underlying material. To obtain uniform application of the prime coat on the surface treated at the junction of previous and subsequent applications, building paper shall be spread on the surface for a sufficient distance back from the ends of each application to start and stop the prime coat on the paper. Immediately after application, the building paper shall be removed and destroyed.

3.4.3 Tack Coat

Tack coat shall be applied at the locations shown on the drawings.

3.5 CURING PERIOD

Following application of the bituminous material and prior to application of the succeeding layer of pavement, the bituminous coat shall be allowed to cure and to obtain evaporation of any volatiles or moisture. [Prime coat shall be allowed to cure without being disturbed for a period of at least 48 hours or longer, as may be necessary to attain penetration into the treated course.]

3.6 FIELD QUALITY CONTROL

Samples of the bituminous material used shall be obtained by the Contractor as directed, under the supervision of the Contracting Officer. The sample may be retained and tested by the Government at no cost to the Contractor.

-- End of Section --

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SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02754

CONCRETE PAVEMENTS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 MEASUREMENT AND PAYMENT
- 1.3 GENERAL
- 1.4 SUBMITTALS

PART 2 PRODUCTS

- 2.1 CEMENTITIOUS MATERIALS
 - 2.1.1 Mix Designation

PART 3 EXECUTION

- 3.1 GENERAL
- 3.2 TESTING
 - 3.2.1 General
 - 3.2.2 Transmittal
 - 3.2.3 Corrective Action
 - 3.2.4 Testing Schedule

-- End of Section Table of Contents --

SECTION 02754

CONCRETE PAVEMENTS

PART 1 GENERAL

1.1 REFERENCES

Concrete pavement construction and materials shall meet the requirements specified in the 2000 Minnesota Department of Transportation Standard Specifications for Construction.

MINNESOTA DEPARTMENT OF TRANSPORTATION (Mn/DOT)

Mn/DOT 2301	Concrete Pavement
Mn/DOT 2461	Structural Concrete
Mn/DOT Concrete Manual	Concrete Manual

1.2 MEASUREMENT AND PAYMENT

Deductions for payment referred to in the Mn/DOT Specification will not be followed. However, requirements of the Mn/DOT Specifications for acceptance of concrete pavement shall be strictly adhered to. Concrete pavement that does not meet the minimum requirements of the Mn/DOT Specifications shall be removed and replaced at the Contractor's expense.

1.3 GENERAL

Mn/DOT Specifications referenced above shall be followed for all construction, quality and testing procedures. The Mn/DOT Specifications will not be followed when referring to measurement, payment, and deductions of contract unit price. In addition, all testing will be the responsibility of the Contractor. Any reference in the Mn/DOT Standard to testing to be done by the Department shall be replaced with testing to be done by the Contractor.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Paving

Paving Schedules at least 7 days prior to start of paving.

Mixture Proportions; G, AE

At least 14 days prior to commencing concrete placing operations, the Contractor shall submit the mixture proportions that meet requirements specified in the Mn/DOT Standard Specifications and that will produce concrete of the quality required. Applicable test reports shall be submitted to verify that the concrete mixture proportions meet requirements specified in the Mn/DOT Standard Specifications and will produce concrete of the quality specified.

PART 2 PRODUCTS

2.1 CEMENTITIOUS MATERIALS

All products shall meet the requirements of the specified section of the 2000 Mn/DOT Standard Specifications for Construction.

2.1.1 Mix Designation

Concrete pavement mix shall meet the requirements of Mn/DOT mix number 3A41.

PART 3 EXECUTION

3.1 GENERAL

Refer to Section 02720 AGGREGATE BASE COURSE for subgrade preparation and aggregate base.

Paving, finishing, curing, joints, and testing shall meet the requirements of the specified section of the 2000 Mn/DOT Standard Specifications for Construction.

3.2 TESTING

3.2.1 General

All testing expenses shall be the Contractor's responsibility. Prior to sampling and testing the work, testing laboratories shall be inspected and approved in accordance with Section 01451 CONTRACTOR QUALITY CONTROL.

3.2.2 Transmittal

The Contracting Officer shall be informed of test results daily for direction or corrective action required. Draft copies of field testing results shall be submitted to the Contracting Officer within 24 hours of the test, as directed. Test results shall be attached to each Quality Control Report submitted.

3.2.3 Corrective Action

Tests of materials which do not meet the contract requirements (failing tests) will not be counted as part of the required testing. Each such failing test must be retaken at the same location as the failing test. If testing indicates material does not meet the contract requirements, the material represented by the failing test shall be removed. The quantity of material represented by the failing test shall be determined by the Contracting Officer up to the quantity represented by the testing frequency. The Contractor may increase testing frequency in the vicinity of a failing test in order to reduce removal requirements, as approved by the Contracting Officer. Such increases in testing frequency shall be at the Contractor's expense and at no additional cost to the Government.

3.2.4 Testing Schedule

a. Surface Smoothness

As soon as the concrete has sufficiently hardened, mainline pavement surfaces shall be tested to determine the Profile Index (PI) by using the Profilograph method prescribed in Mn/DOT Standard Specifications for Construction Section 2301.

b. Coring

Coring to determine pavement thickness shall be taken after grinding is complete. Contractor shall take one core sample at random locations as directed by the Contracting Officer per 2,000 square yards or fraction thereof. Satisfactory coring results are specified in Mn/DOT Standard Specifications for Construction Section 2301.

c. Strength Tests

Compressive or flexural tests shall be made to determine that concrete strength specified in Mn/DOT Standard Specifications for Construction Section 2301, 2461 and the Mn/DOT Concrete Manual is achieved prior to opening pavement to traffic.

Compressive test and flexural tests will be made and cured according to AASHTO T-32.

Concrete cylinders will be tested for compressive strength according to AASHTO T-22. 1 set of 5 cylinders per 4,000 square yards or fraction thereof shall be sampled and tested.

Concrete beams will be tested for flexural strength according to AASHTO T-97. 1 set of 3 beams per 4,000 square yards or fraction thereof shall be sampled and tested.

d. Tests for Uniformity

Uniformity will be tested by comparing slump, air content, and coarse aggregate content of 2 individual samples taken from approximately the 1/6 and 5/6 points of the batch as discharged at the site of placement. Satisfactory uniformity results are specified in Mn/DOT Standard Specifications for Construction Section 2301, 2461 and the Mn/DOT Concrete

Manual.

e. Unit Weight

The weight per cubic foot of concrete, batch volume, and cement content will be determined according to AASHTO T-121. One test per set of cylinders or beams shall be sampled. Satisfactory results are specified in Mn/DOT Standard Specifications for Construction Section 2301, 2461 and the Mn/DOT Concrete Manual.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02763

PAVEMENT MARKINGS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 GENERAL
- 1.3 SUBMITTALS
- 1.4 DELIVERY AND STORAGE
- 1.5 EQUIPMENT
- 1.6 MAINTENANCE OF TRAFFIC
 - 1.6.1 Roads, Streets, and Parking Areas

PART 2 PRODUCTS

- 2.1 MATERIALS

PART 3 EXECUTION

- 3.1 GENERAL

-- End of Section Table of Contents --

SECTION 02763

PAVEMENT MARKINGS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

MINNESOTA DEPARTMENT OF TRANSPORTATION

Mn/DOT S-233	SPECIAL PROVISIONS - SP2000BOOK
Mn/DOT S-234	SPECIAL PROVISIONS - SP2000BOOK
Mn/DOT S-235	SPECIAL PROVISIONS - SP2000BOOK
Mn/DOT S-236	SPECIAL PROVISIONS - SP2000BOOK

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 247	(1981; R 1996) Glass Beads Used in Traffic Paint
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1.2 GENERAL

Mn/DOT Special Provisions referenced above shall be followed for all construction, quality and testing procedures. The Mn/DOT Special Provisions will not be followed when referencing to measurement, payment and deductions of the contract unit price. In addition, all testing will be the responsibility of the Contractor. Any reference in the Mn/DOT Special Provisions to testing to be done by the Department shall be replaced with testing to be done by the Contractor.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Temporary Striping Layout; G, COR

A striping layout shall be prepared and submitted to the Contracting Officer seven (7) days prior to striping work for all temporary bypasses, traffic control, and detours included in the plans.

Striping Layout; G, COR

A project striping layout shall be prepared and submitted to the Contracting Officer seven (7) days prior to striping work. All proposed striping shall conform to existing conditions unless otherwise noted on the plans.

SD-07 Certificates

Volatile Organic Compound (VOC);

Certificate stating that the proposed pavement marking paint meets the VOC regulations of the local Air Pollution Control District having jurisdiction over the geographical area in which the project is located.

Materials;

All pavement marking materials shall meet the requirements outlined in the Mn/DOT Special Provisions referenced. Certification that the products meet these requirements shall be submitted to the Contracting Officer seven (7) days prior to striping work.

1.4 DELIVERY AND STORAGE

All materials shall be delivered and stored in sealed containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, manufacturer's name, and directions, all of which shall be plainly legible at time of use.

1.5 EQUIPMENT

All machines, tools, and equipment used in performance of the work shall be approved and maintained in satisfactory operating condition. Hand-operated push-type machines of a type commonly used for application of paint to pavement surfaces will be acceptable for marking small streets and parking areas. Applicator machine shall be equipped with the necessary paint tanks and spraying nozzles, and shall be capable of applying paint uniformly at coverage specified. Sandblasting equipment shall be provided as required for cleaning surfaces to be painted.

1.6 MAINTENANCE OF TRAFFIC

1.6.1 Roads, Streets, and Parking Areas

When traffic must be rerouted or controlled to accomplish the work, the

necessary warning signs, flagpersons, and related equipment for the safe passage of vehicles shall be provided.

PART 2 PRODUCTS

2.1 MATERIALS

All materials shall meet the requirements of the specified sections of the Mn/DOT Special Provisions referenced. Proposed striping material shall conform to existing conditions unless otherwise noted on the plans.

PART 3 EXECUTION

3.1 GENERAL

Manufacturing, testing, and application of pavement markings shall meet the requirements of the Mn/DOT Special Provisions referenced.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02842

TRAFFIC BARRIERS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 DESCRIPTION OF WORK
- 1.3 DEFINITIONS
- 1.4 SUBMITTALS

PART 2 PRODUCTS

- 2.1 END TREATMENT - SLOTTED RAIL TERMINAL
- 2.2 OTHER MATERIALS

PART 3 EXECUTION

- 3.1 GENERAL
- 3.2 MAINTENANCE DURING CONSTRUCTION

-- End of Section Table of Contents --

SECTION 02842

TRAFFIC BARRIERS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

MINNESOTA DEPARTMENT OF TRANSPORTATION (Mn/DOT)

Mn/DOT 2554 Traffic Barriers

Mn/DOT SP2000-191 End Treatment - Slotted Rail Terminal

1.2 DESCRIPTION OF WORK

The work shall consist of all labor, materials, and equipment necessary to provide and install guardrail, barrier fencing, permanent barricades, and similar devices that protect or prohibit traffic at the locations indicated in the Plans.

1.3 DEFINITIONS

The term "Engineer" referenced in Mn/DOT Standard Specification for Construction shall mean the "Contracting Officer."

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Slotted Rail Terminal; G, AE

PART 2 PRODUCTS

2.1 END TREATMENT - SLOTTED RAIL TERMINAL

This work shall consist of constructing a Slotted Rail Terminal (SRT) in accordance with the applicable provisions of Mn/DOT 2554, as recommended by the manufacturer, as directed by the Contracting Officer, and the following:

The slotted rail terminal shall be a SRT-350 Slotted Rail Terminal of the type manufactured by Syro Steel Company, Girard, Ohio 44420 or Centerville, Utah 84014, or approved equal.

2.2 OTHER MATERIALS

All other materials shall be in accordance with the provisions of Mn/DOT 2554 requirements.

PART 3 EXECUTION

3.1 GENERAL

All work for this Section will be accomplished in accordance with the Plans and as specified in Mn/DOT 2554.

3.2 MAINTENANCE DURING CONSTRUCTION

The Contractor shall maintain a sufficient supply of replacement parts on hand during the course of this Contract to maintain or repair the installations. The Contractor shall repair any attenuators which get damaged within as short a time period as possible, and shall supply to the Engineer three names of Contractor personnel who can be contacted in case of damage occurring during non-work hours.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02920

SEEDING, SODDING, AND TOPSOIL

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 SOURCE INSPECTION
- 1.4 DELIVERY, INSPECTION, STORAGE, AND HANDLING
 - 1.4.1 Inspection
 - 1.4.2 Storage
 - 1.4.3 Handling
 - 1.4.4 Soil Amendments

PART 2 PRODUCTS

- 2.1 SEED
 - 2.1.1 Seed Classification
 - 2.1.2 Permanent Seed Species and Mixtures
 - 2.1.3 Temporary Seed Species
 - 2.1.4 Quality
- 2.2 TOPSOIL
- 2.3 SOIL AMENDMENTS
 - 2.3.1 Fertilizer
 - 2.3.2 Organic Material
 - 2.3.2.1 Rotted Manure
 - 2.3.2.2 Recycled Compost
- 2.4 MULCH
 - 2.4.1 Straw Mulch
 - 2.4.2 Paper Fiber
- 2.5 WATER
- 2.6 PESTICIDE
- 2.7 HERBICIDE

PART 3 EXECUTION

- 3.1 INSTALLING SEED TIME AND CONDITIONS
 - 3.1.1 Notification
 - 3.1.2 Seeding Time
 - 3.1.3 Seeding Conditions
- 3.2 SOIL TEST
- 3.3 SITE PREPARATION
 - 3.3.1 Finished Grade and Topsoil
 - 3.3.2 Spreading Topsoil

- 3.3.2.1 Equipment
 - 3.3.2.2 Stripped Materials
 - 3.3.3 Tillage
 - 3.3.4 Treatments
 - 3.3.5 Prepared Surface
- 3.4 SEEDING
 - 3.4.1 Equipment
 - 3.4.2 Broadcast Seeding
 - 3.4.3 Drill Seeding
 - 3.4.4 Hydroseeding (Optional)
 - 3.4.5 Mulching
 - 3.4.5.1 Hay or Straw Mulch
 - 3.4.5.2 Mechanical Anchor
 - 3.4.5.3 Wood Cellulose Fiber, Paper Fiber, and Recycled Paper
 - 3.4.6 Initial Watering
 - 3.4.7 Native Grasses
- 3.5 RESTORATION AND CLEAN UP
- 3.6 MAINTENANCE
 - 3.6.1 Maintenance Watering
 - 3.6.2 Mowing
 - 3.6.3 General Maintenance
 - 3.6.3.1 Repair or Reinstall
 - 3.6.4 Maintenance Record
- 3.7 ACCEPTANCE
- 3.8 SURFACE EROSION CONTROL

-- End of Section Table of Contents --

SECTION 02920

SEEDING, SODDING, AND TOPSOIL

PART 1 GENERAL

Wherever possible, all seed shall be drilled. Other seeding methods are subject to approval. Existing turf areas which have been damaged during the contract operations, and which are outside of the limits designated to be seeded, shall be restored following the requirements in this section, at no additional cost to the Government.

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

MINNESOTA DEPARTMENT OF TRANSPORTATION (Mn/DOT)

Mn/DOT 2575	Turf Establishment
Mn/DOT 3876	Seed
Mn/DOT Seeding Manual 2000	Seeding Information

AGRICULTURAL MARKETING SERVICE (AMS)

AMS-01	(Aug 95) Federal Seed Act Regulations Part 201
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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 4972	(1995a) pH of Soils
ASTM D 5268	(1992; R 1996) Topsoil Used for Landscaping Purposes

AMERICAN SOD PRODUCERS ASSOCIATION, INC. (ASPA)

ASPA	(1988) Guideline Specifications to Sodding
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1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be

submitted in accordance with SECTION 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Experience for Native Grasses;

The Contractor shall submit a statement indicating that the work to establish the turf will be supervised by an individual with a minimum of 5 years experience with establishment and restoration of native plant communities.

SD-03 Product Data

Manufacturer's Literature;

The Contractor shall submit manufacturer's literature discussing physical characteristics, applications, guarantees, and installation of the seed, mulch, and fertilizer. The Contractor shall submit manufacturer's literature for equipment showing application and installation instructions.

SD-04 Samples

Samples;

Samples shall be provided for the following:

- a. A 5 pound sample for each source of topsoil brought from off-site.
- b. A 2 pound sample for each type of soil amendment proposed for use.
- c. A 2 pound sample for each type of mulch proposed for use.

SD-06 Test Reports

Soil Test;

Certified reports of inspections and laboratory tests, prepared by an independent testing agency, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used and compliance with recognized test standards shall be described.

Seed Test;

The Contractor shall submit test reports for a purity and germination test following the Association of Official Seed Analysts (AOSA) rules for each seed mixture. The test reports shall indicate the purity percentage and germination percentage for each species.

Quantity Check;

Bag count or bulk weight measurements of material used compared

with area covered to determine the application rate and quantity installed.

Maintenance Record;

Maintenance work performed, area repaired or reinstalled, diagnosis for unsatisfactory stand of grass plants.

Water Test

Water from sources other than municipal water supply shall be tested for salinity and pH.

SD-07 Certificates

Seed Order for Native Grasses;

Contractor shall submit proof of seed order for native grass seed mixes as specified within this section within 30 days of notice to proceed.

Certificates of Compliance;

Prior to the delivery of materials, certificates of compliance attesting that materials meet the specified requirements. Certified copies of the material certificates shall include the following:

- a. Seed. Mixture percentage, percent pure live seed, percent germination, weed seed content, and date tested.
- b. Topsoil. Gradation, pH, organic matter content, textural class, soluble salts.
- d. Fertilizer. Chemical analysis and composition percent.
- e. Organic Material: Composition and source.
- g. Mulch: Composition and source.

1.3 SOURCE INSPECTION

The source of delivered topsoil shall be subject to inspection.

1.4 DELIVERY, INSPECTION, STORAGE, AND HANDLING

1.4.1 Inspection

Seed shall be inspected upon arrival at the job site for conformity to species and quality. Seed materials shall be delivered in manufacturer's original, unopened containers with labels and tags intact and legible. Seed that is wet, moldy, or bears a test date five months or older, shall be rejected. Other materials shall be inspected for compliance with specified requirements. The following shall be rejected: open soil amendment containers or wet soil amendments; topsoil that contains slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over a minimum 1-1/2 inch diameter; and topsoil that contains viable plants and plant parts. Unacceptable materials shall be removed from the job site.

1.4.2 Storage

Materials shall be stored in areas provided by the Contractor. The storage areas shall be made accessible to the Contracting Officer so that application rates can be verified. Seed, lime, and fertilizer shall be stored in cool, dry locations away from contaminants. Chemical treatment materials shall be stored according to manufacturer's instructions and not with seed.

1.4.3 Handling

Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.

1.4.4 Soil Amendments

Soil amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's chemical analysis. In lieu of containers, soil amendments may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.

PART 2 PRODUCTS

2.1 SEED

Substitutions will not be allowed without written request and approval from the Contracting Officer. The mixing of seed may be done by the seed supplier prior to delivery, or on site in the presence of the Contracting Officer. Seed for native grass and forbe species shall be gathered from within 500 miles of the jobsite.

2.1.1 Seed Classification

State-certified seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for mixture percentage, purity, germination, weed seed content, and inert material. Labels shall be in conformance with AMS-01 and applicable state seed laws.

2.1.2 Permanent Seed Species and Mixtures

Follow seed material guidelines outlined in Mn/DOT Standard Specifications for Construction, Sections 2575 and 3876 and the Mn/DOT Seeding Manual 2000. Permanent seed species and mixtures shall be proportioned by weight as follows:

Mix Designation	Pounds Pure Live Seed Per Acre
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28A Modified (28B)

40

2.1.3 Temporary Seed Species

Seed species for winter erosion protection, temporary surface erosion control, or overseeding shall consist of 10 pounds of oats or 1-1/2 bushels of winter wheat per acre.

2.1.4 Quality

Weed seed shall be a maximum 1 percent by weight of the total mixture. Inoculant shall consist of the proper bacteria applied in the amount and manner recommended by the manufacturer to all legumes in the seed mix.

2.2 TOPSOIL

Existing topsoil shall be used to the greatest extent possible. If topsoil is brought in from off-site, it shall be as defined in ASTM D 5268. All topsoil shall be free from slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over 1-1/2 inch diameter. Topsoil shall be free from viable plants and plant parts.

2.3 SOIL AMENDMENTS

Soil amendments required under this contract consist of fertilizer. Soil amendments consisting of pH adjuster, organic material and soil conditioners may be added at the Contractors option if approved by the Contracting Officer, or shall be added if directed by the Contracting Officer and will be negotiated in accordance with Contract Clause CHANGES.

2.3.1 Fertilizer

The nutrients ratio shall be 25 percent nitrogen, 5 percent phosphorus, and 10 percent potassium. Fertilizer shall be slow release complete commercial grade, free flowing, and uniform in composition and should include sulfur and iron as well (not less than 1% and not more than 8% added sulfur and iron).

2.3.2 Organic Material

Organic material shall consist of either rotted manure, recycled compost, or worm castings. Bonemeal and decomposed wood derivatives shall not be used.

2.3.2.1 Rotted Manure

Rotted manure shall be unleached horse, chicken or cattle manure containing a maximum 25 percent by volume of straw, sawdust, or other bedding materials. It shall contain no chemicals or ingredients harmful to plants.

The manure shall be heat treated to kill weed seeds and be free of stones, sticks, and soil.

2.3.2.2 Recycled Compost

Compost shall be a well decomposed, stable, weed free organic matter

source. Compost shall be derived from vegetable food products; agricultural or industrial residuals; biosolids (treated sewage sludge); yard trimmings; or source-separated or mixed solid waste. The compost shall possess no objectionable odors and shall not resemble the raw material from which it was derived. The material shall not contain substances toxic to plants. Gradation: The compost material shall pass through a 3/8 inch screen, possess a pH of 5.5 to 8.0, and have a moisture content between 35-55 percent by weight. The material shall not contain more than 1 percent by weight of man-made foreign matter. Compost shall be cleaned of plastic materials larger than 2 inches in length.

2.4 MULCH

2.4.1 Straw Mulch

Straw mulch materials shall consist of wheat, oat, or rye straw, hay, grass, or other plants approved by the Contracting Officer. Mulch materials shall be native to the region. The mulch material shall be air dry, reasonably light in color, and shall not be musty, moldy, caked, or otherwise of low quality. The mulch shall be seed free or fumigated to prevent introduction of weeds. The use of mulch that contains noxious weeds will not be accepted. Dry mulching material which breaks and does not bend is unacceptable. Mulch shall have a consistency for placing with commercial mulch blowing equipment.

2.4.2 Paper Fiber

Paper fiber mulch shall be recycled news print that is shredded for the purpose of mulching seed.

2.5 WATER

Water shall be the responsibility of the Contractor, unless otherwise noted. Water shall not contain elements toxic to plant life.

2.6 PESTICIDE

Pesticide shall not be applied without written approval of the Contracting Officer.

2.7 HERBICIDE

Herbicide shall be broad spectrum that leaves no lasting harmful residues and allows planting within 10 to 14 days after application. The herbicide shall be glyphosate based. Herbicide shall be applied per manufacturer's recommendations.

PART 3 EXECUTION

3.1 INSTALLING SEED TIME AND CONDITIONS

3.1.1 Notification

The Contractor shall notify the Contracting Officer 24 hours in advance of

beginning seeding or any changes in turf establishment operations.

3.1.2 Seeding Time

Seed shall be installed from May to November. No finished construction area shall be left untopsoiled and unseeded during the winter months. When substantially complete areas are not seeded within the specified seeding times for fall planting, a temporary winter cover shall be placed.

3.1.3 Seeding Conditions

Seeding operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, or other unsatisfactory conditions prevail, the work shall be stopped when directed.

When special conditions warrant a variance to the seeding operations, proposed alternate times shall be submitted for approval.

3.2 SOIL TEST

Delivered topsoil, existing soil in smooth graded areas, and stockpiled topsoil shall be tested in accordance with ASTM D 5268 and ASTM D 4972 for determining the particle size, pH, and organic matter content. The samples shall be taken at locations directed by the Contracting Officer, unless waived. The tests shall determine the quantities and type of soil amendments required to meet local growing conditions for the seed species specified.

3.3 SITE PREPARATION

3.3.1 Finished Grade and Topsoil

The Contractor shall verify that finished grades are as indicated on drawings, and the placing of topsoil, smooth grading, and compaction requirements have been completed prior to the commencement of the seeding operation. All vegetation, including live roots, shall be completely removed or treated with herbicide prior to spreading topsoil or placing sod.

3.3.2 Spreading Topsoil

Topsoil shall be distributed and spread uniformly to one half the thickness shown on the plans and tilled to a depth of 4 inches into the subgrade. The remaining half of the topsoil shall then be placed. Surface irregularities resulting from topsoiling or other operations shall be leveled to prevent depressions.

3.3.2.1 Equipment

Topsoil shall be spread using a bladed dozer having ground pressure less than 4.5 psi and operating weight less than 35,000 pounds, or with rubber tired equipment having operating weight less than 10,000 pounds. The work shall be coordinated such that equipment for hauling the topsoil does not travel over the topsoil in place. Areas compacted by construction operations shall be completely pulverized by tillage.

3.3.2.2 Stripped Materials.

Topsoil obtained from stripping operations shall be kept separate from other unusable excavated materials, brush, litter, objectionable weeds, roots, stones, and other materials that would interfere with planting and maintenance operations. Unusable material shall be removed and properly disposed of.

3.3.3 Tillage

Topsoil on slopes up to a maximum 3H:1V slope shall be tilled to a nominal 3 inch depth by plowing, disking, harrowing, rototilling or other approved method. On slopes between 3H:1V and 1:1, the soil shall be tilled to a minimum 2 inch depth by scarifying with heavy rakes, or other method. On slopes 1:1 and steeper, no tillage is required.

3.3.4 Treatments

Fertilizers shall be applied per manufacturer's directions. The fertilizer shall be applied at the rate recommended by the soil test. Fertilizer may be incorporated as part of the tillage or hydroseeding operation. The Contractor shall assume full responsibility for any loss or damage to seed or sod arising from improper use of herbicides or other chemicals or due to his failure to allow sufficient time to permit dissipation of toxic residues, whether or not such materials are specified herein.

3.3.5 Prepared Surface

The prepared surface shall be 1 inch below the adjoining grade of any surfaced area. New surfaces shall be blended to existing areas. The prepared surface shall be completed with a light raking to remove debris. Debris and stones over a minimum 1-1/2 inch in any dimension shall be removed from the surface. Drainage patterns shall be maintained as indicated on drawings. Tolerance for drainage ditches and swales shall be within 1 inch of the plan elevation. The prepared surface shall be protected from compaction or damage by vehicular or pedestrian traffic and surface erosion.

3.4 SEEDING

Prior to installing seed, any previously prepared surface compacted or damaged shall be reworked to meet the requirements of paragraph SITE PREPARATION. Seeding operations shall not take place when the wind velocity will prevent uniform seed distribution.

3.4.1 Equipment

Gravity feed applicators, which drop seed directly from a hopper onto the prepared soil, shall not be used because of the difficulty in achieving even coverage, unless otherwise approved.

3.4.2 Broadcast Seeding

In areas inaccessible to drill seeding, seed shall be broadcast by hand.

Seed shall be uniformly broadcast at the rate specified for the mix. Half the total rate of seed application shall be sown with sower moving in one direction, and the remainder with sower moving at right angles to first sowing. Seed shall be covered a maximum 1/4 inch depth by disk harrow, steel mat drag, cultipacker, or other approved device. Seed shall not be broadcast when wind speed exceeds 5 miles per hour.

3.4.3 Drill Seeding

Seed shall be uniformly drilled to a depth of 1/2 to 3/4 inches at the rate specified for the mix. Equipment shall have drills a maximum 6 inches distance apart. Row markers shall be used with the drill seeder. Seed shall be drilled in two directions, applying approximately half the seed in each direction. The drilling equipment shall be maintained with half full seed boxes during the seeding operations. When slopes exceed 1 vertical on 5 horizontal, baffle plates spaced not more than 6 inches apart shall be installed in the seed box.

3.4.4 Hydroseeding (Optional)

The hydroseeding operation shall apply the seed, mulch, and fertilizer simultaneously. The seed shall be applied at the rate indicated in the Seed Mixture Table. The fertilizer shall be applied at a rate proposed by the Contractor and agreed to by the Contracting Officer. The mulch shall be applied at a rate of about 1 ton per acre. During application, the spray shall be directed to obtain a uniform material distribution as evidenced by a formation of a "blotter-like" cover, with about 5% void area. The mulch shall permit percolation of water to the underlying soil. The seed mixed with water and fertilizer shall be applied within 1 hour after adding to the tank.

3.4.5 Mulching

3.4.5.1 Hay or Straw Mulch

Hay or straw mulch shall be spread uniformly at the rate of 2 tons per acre, except as modified for native grasses. Mulch shall be spread by hand, blower-type mulch spreader, or other approved method. Mulching shall be started on the windward side of relatively flat areas or on the upper part of steep slopes, and continued uniformly until the area is covered. The mulch shall not be bunched or clumped. Sunlight shall not be completely excluded from penetrating to the ground surface. All areas installed with seed shall be mulched on the same day as the seeding. Mulch shall be anchored immediately following spreading.

3.4.5.2 Mechanical Anchor

Mechanical anchor shall be a V-type-wheel land packer; a scalloped-disk land packer designed to force mulch into the soil surface; or other suitable equipment.

3.4.5.3 Wood Cellulose Fiber, Paper Fiber, and Recycled Paper

Wood cellulose fiber, paper fiber, or recycled paper shall be applied as

part of the hydroseeding operation. The mulch shall be mixed and applied in accordance with the manufacturer's recommendations.

3.4.6 Initial Watering

Watering shall be started immediately after completing the seeding of an area. Water shall be applied to supplement rainfall at a rate sufficient to ensure moist soil conditions to a minimum 3 inch depth. Run-off and puddling shall be prevented. Watering trucks shall not be driven over turf areas, unless otherwise directed.

3.4.7 Native Grasses

Hay or straw mulch shall be spread uniformly at the rate of 2 tons per acre. Areas seeded with native grasses, except slopes steeper than 3H:1V, shall be firmed with a roller not exceeding 90 pounds per foot roller width. Seed drills equipped with rollers are acceptable.

3.5 RESTORATION AND CLEAN UP

Immediately upon completion of the seeding operation in an area, the area shall be protected against traffic or other use by erecting barricades, providing signage, or as directed. Existing turf areas, pavements, and facilities that have been damaged from the seeding operation shall be restored to original condition at Contractor's expense. Excess and waste material shall be removed from the seeded areas and shall be disposed offsite. Adjacent paved areas shall be cleaned.

3.6 MAINTENANCE

3.6.1 Maintenance Watering

The Contractor shall be responsible for watering after planting to promote adequate growth and development. Water shall be distributed with equipment that does not erode or disturb the mulch. If the grass wilts, or if the soil becomes crusted and desiccated during germination, the Contracting Officer may direct watering. Watering directed by the Contracting Officer shall be performed within 48 hours after notice by the Contracting Officer to the Contractor; and shall place about 10,000 gallons per acre.

3.6.2 Mowing

- a. Native Grasses: Areas seeded with native grasses shall be mowed during the first growing season to control pioneering weeds and other competition. For the purposes of this project a weed is defined as any plant not included in the seed mix. Mowing should be done before the general height is 6 to 10 inches, when the weedy foliar cover reaches 50 percent of the seeded area, or when the weed species begin to flower. The first mowing shall be at a height of 3 inches with the following mowings to be set at a height of 4 to 8 inches. Rotary, flail, or sickle bar type mowing equipment is acceptable.

3.6.3 General Maintenance

Maintenance of the seeded areas shall include eradicating weeds, protecting embankments and ditches from surface erosion, maintaining erosion control materials and mulch, protecting installed areas from traffic, mowing, watering, and post-fertilization. If any portion of the surface becomes rilled, gullied, damaged, or destroyed, that portion shall be repaired to re-establish the area without additional cost to the government. The Contractor shall control erosion during the maintenance period by using ditch checks, sod swales, silt fences or other methods until a proper stand of turf is established.

3.6.3.1 Repair or Reinstall

Unsatisfactory stand of grass plants and mulch shall be repaired or reinstalled, and eroded areas shall be properly filled. Mulch material that has been removed by wind or other causes shall be replaced and secured. Maintenance shall include protecting embankments and ditches from erosion and maintaining erosion control material.

3.6.4 Maintenance Record

A record of each site visit shall be furnished, describing the maintenance work performed; areas repaired or reinstalled; and diagnosis for unsatisfactory stand of grass plants.

3.7 ACCEPTANCE

Turf establishment after seeding shall extend for 12 months after completion of the seeding on the entire project, unless desired growth is established, and shortening the period of the Contractor's responsibility for acceptably established areas is authorized by the Contracting Officer. Grass plants shall be evaluated for species and health when the grass plants are a minimum 1 inch high.

- a. Native Grasses. A proper stand of turf from the seeding of native grasses is defined as a minimum of 2 to 4 plants per square foot and where no gaps larger than 6 inches in diameter occur anywhere in the turfed area. Only plants specified in the seed mix table will be considered.

3.8 SURFACE EROSION CONTROL

Where indicated or as directed, surface erosion control material shall be installed in accordance with manufacturer's instructions. Placement of the material shall be accomplished without damage to installed material or without deviation to finished grade. When directed during contract delays affecting the seeding operation or when a quick cover is required to prevent surface erosion, the areas designated shall be seeded with a temporary seed crop.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 03 - CONCRETE

SECTION 03100

STRUCTURAL CONCRETE FORMWORK

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DESIGN
 - 1.3.1 Design Requirements
 - 1.3.2 Form Removal
- 1.4 STORAGE AND HANDLING

PART 2 PRODUCTS

- 2.1 FORM MATERIALS
 - 2.1.1 Forms For Class A and Class B Finish (Exposed to View)
 - 2.1.2 Forms For Class C Finish (Not Exposed to View)
 - 2.1.3 Forms For Class D Finish (Concrete to be Covered with Soil)
 - 2.1.4 Retain-In-Place Metal Forms
 - 2.1.5 Form Ties
 - 2.1.6 Form Releasing Agents
 - 2.1.7 Fiber Voids
- 2.2 FIBER VOID RETAINERS
 - 2.2.1 Polystyrene Rigid Insulation
 - 2.2.2 Precast Concrete

PART 3 EXECUTION

- 3.1 INSTALLATION
 - 3.1.1 Formwork
 - 3.1.2 Fiber Voids
 - 3.1.3 Fiber Void Retainers
- 3.2 CHAMFERING
- 3.3 COATING
- 3.4 REMOVAL OF FORMS
- 3.5 RESHORING
- 3.6 TOLERANCES FOR FORMED SURFACES

-- End of Section Table of Contents --

SECTION 03100

STRUCTURAL CONCRETE FORMWORK

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 347R (1994) Guide to Formwork for Concrete

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.4 (1995) Basic Hardboard

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 578 (1995) Rigid, Cellular Polystyrene Thermal Insulation

U.S. DEPARTMENT OF COMMERCE (DOC)

DOC PS 1 (1996) Voluntary Product Standard - Construction and Industrial Plywood

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Formwork

Drawings showing details of formwork, including dimensions of fiber voids, joints, supports, studding and shoring, and sequence of form and shoring removal.

SD-03 Product Data

Design

Design analysis and calculations for form design and methodology used in the design. Layout of joints for approval on any formwork being used for Class A or Class B finishes.

Form Materials

Manufacturer's data including literature describing form materials, accessories, and form releasing agents.

Form Releasing Agents

Manufacturer's recommendation on method and rate of application of form releasing agents.

SD-04 Samples

Fiber Voids

One sample unit of fiber voids prior to installation of the voids.

SD-07 Certificates

Fiber Voids

Certificates attesting that fiber voids conform to the specified requirements.

1.3 DESIGN

Formwork shall be designed by a Professional Engineer currently registered in the State of Minnesota, having a minimum of 3 years experience in this type of design work and in accordance with methodology of ACI 347R for anticipated loads, lateral pressures, and stresses. Forms shall be capable of producing a surface which meets the requirements of the class of finish specified in Section 03300 CAST-IN-PLACE STRUCTURAL CONCRETE. Forms shall be capable of withstanding the pressures resulting from placement and vibration of concrete.

1.3.1 Design Requirements

Design formwork for loads, lateral pressures and allowable stresses outlined in ACI 347 and for design considerations, wind loads, allowable stresses and other applicable requirements of the controlling local building code. Where conflicts occur between the above two standards, the more stringent requirements shall govern. Design formwork to limit maximum deflection of form facing materials reflected in concrete surfaces exposed to view to 1/240 of span between structural members.

1.3.2 Form Removal

Develop a procedure and schedule for removal of shores and installation of reshores and for calculating the loads transferred to the structure during this process. Perform structural calculations as required to prove that all portions of the structure in combination with remaining forming and shoring system has sufficient strength to safely support its own weight plus the loads placed thereon. When developing procedure, schedule and structural calculations, consider the following at each stage of construction: The structural system that exists; effects of all loads during construction; strength of concrete; the influence of deformations of the structure and shoring system on the distribution of dead loads and construction loads; the strength and spacing of shores or shoring systems used, as well as the method of shoring, bracing, shore removal, and reshoring including the minimum time intervals between the various operations; any other loading or condition that affects the safety of serviceability of the structure during construction.

1.4 STORAGE AND HANDLING

Fiber voids shall be stored above ground level in a dry location. Fiber voids shall be kept dry until installed and overlaid with concrete.

PART 2 PRODUCTS

2.1 FORM MATERIALS

2.1.1 Forms For Class A and Class B Finish (Exposed to View)

Forms for Class A and Class B finished surfaces shall be plywood panels conforming to DOC PS 1, Grade B-B concrete form panels, Class I or II. Other form materials or liners may be used provided the smoothness and appearance of concrete produced will be equivalent to that produced by the plywood concrete form panels. Use full 4 foot by 8 foot panels unless smaller pieces will cover entire area.

2.1.2 Forms For Class C Finish (Not Exposed to View)

Forms for Class C finished surfaces shall be shiplap lumber; plywood conforming to DOC PS 1, Grade B-B concrete form panels, Class I or II; tempered concrete form hardboard conforming to AHA A135.4; other approved concrete form material; or steel, except that steel lining on wood sheathing shall not be used.

2.1.3 Forms For Class D Finish (Concrete to be Covered with Soil)

Forms for Class D finished surfaces, except where concrete is placed against earth, shall be wood or steel or other approved concrete form material.

2.1.4 Retain-In-Place Metal Forms

Ribbed, expanded metal retain-in-place concrete forms commercially fabricated to provide an intentionally roughened surface. Hot-dipped galvanized. Similar to "Stay-Form" by Alabama Metal Industries Corporation.

2.1.5 Form Ties

Form ties shall be factory-fabricated metal ties, shall be of the removable or internal disconnecting or snap-off type, and shall be of a design that will not permit form deflection and will not spall concrete upon removal. Solid backing shall be provided for each tie. Except where removable tie rods are used, ties shall not leave holes in the concrete surface less than 1/4 inch nor more than 1 inch deep and not more than 1 inch in diameter. Removable tie rods shall be not more than 1-1/2 inches in diameter.

2.1.6 Form Releasing Agents

Form releasing agents shall be commercial formulations that will not bond with, stain or adversely affect concrete surfaces. Agents shall not impair subsequent treatment of concrete surfaces depending upon bond or adhesion nor impede the wetting of surfaces to be cured with water or curing compounds.

2.1.7 Fiber Voids

Fiber voids shall be the product of a reputable manufacturer regularly engaged in the commercial production of fiber voids. The voids shall be constructed of double faced, corrugated fiberboard. The corrugated fiberboard shall be fabricated of standard kraft paper liners, impregnated with paraffin, and laminated with moisture resistant adhesive, and shall have a board strength of 275 psi. Voids which are impregnated with paraffin after construction, in lieu of being constructed with paraffin impregnated fiberboard, are acceptable. Voids shall be designed to support not less than 1000 psf. To prevent separation during concrete placement fiber voids shall be assembled with steel or plastic banding at 4 feet on center maximum, or by adequate stapling or gluing as recommended by the manufacturer. Fiber voids placed under concrete slabs and that are 8 inches in depth may be heavy duty "waffle box" type, constructed of paraffin impregnated corrugated fiberboard.

2.2 FIBER VOID RETAINERS

2.2.1 Polystyrene Rigid Insulation

Polystyrene rigid insulation shall conform to ASTM C 578, Type V, VI, or VII, square edged. Size shall be 1-1/2 inches thick by 16 inches in height by 3 feet in length, unless otherwise indicated.

2.2.2 Precast Concrete

Precast concrete units shall have a compressive strength of not less than 2500 psi, reinforced with 6 inch by 6 inch by W1.4 WWF wire mesh, and 12 inches (height) by 3 feet (length) by 1-5/8 inches (thickness) in size unless indicated.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1.1 Formwork

Forms shall be mortar tight, properly aligned and adequately supported to produce concrete surfaces meeting the surface requirements specified in Section 03300 CAST-IN-PLACE STRUCTURAL CONCRETE and conforming to construction tolerance given in TABLE 1. Where concrete surfaces are to have a Class A or Class B finish, joints in form panels shall be arranged as approved. Where forms for continuous surfaces are placed in successive units, the forms shall fit over the completed surface to obtain accurate alignment of the surface and to prevent leakage of mortar. Forms shall not be reused if there is any evidence of surface wear and tear or defects which would impair the quality of the surface. Surfaces of forms to be reused shall be cleaned of mortar from previous concreting and of all other foreign material before reuse. Form ties that are to be completely withdrawn shall be coated with a nonstaining bond breaker.

Retain-in-place Forms: Support retain-in-place forms as required to maintain the formwork in proper position. Hold the edge of retain-in-place forms back a minimum of 2 inches from all smooth formed concrete surfaces. Retain-in-place forms may be used at the Contractor's option at: Surfaces that will be backfilled with soil (Maintain a minimum of 3 inches of concrete cover over all reinforcing); roughened construction joints. Other locations approved by Engineer.

Provide temporary openings at base of column and wall forms and at other points where necessary to facilitate cleaning and observation immediately before concrete is placed, and to limit height of free fall of concrete to prevent aggregate segregation. Temporary openings to limit height of free fall of concrete shall be spaced no more than 8 feet apart. Clean surfaces of forms, reinforcing steel and other embedded materials of any accumulated mortar or grout from previous concreting and of all foreign material before concrete is placed.

3.1.1.2 Fiber Voids

Voids shall be placed on a smooth firm dry bed of suitable material, to avoid being displaced vertically, and shall be set tight, with no buckled cartons, in order that horizontal displacement cannot take place. Each section of void shall have its ends sealed by dipping in paraffin, with any additional cutting of voids at the jobsite to be field dipped in the same type of sealer, unless liners and flutes are completely impregnated with paraffin. Prior to placing reinforcement, the entire formed area for slabs shall be covered with a 4 x 8 feet minimum flat sheets of fiber void corrugated fiberboard. Joints shall be sealed with a moisture resistant tape having a minimum width of 3 inches. If voids are destroyed or damaged and are not capable of supporting the design load, they shall be replaced prior to placing of concrete.

3.1.1.3 Fiber Void Retainers

Fiber void retainers shall be installed, continuously, on both sides of fiber voids placed under grade beams in order to retain the cavity after the fiber voids biodegrade.

3.2 CHAMFERING

Except as otherwise shown, external corners that will be exposed shall be chamfered, beveled, or rounded by moldings placed in the forms.

3.3 COATING

Forms for Class A and Class B finished surfaces shall be coated with a form releasing agent before the form or reinforcement is placed in final position. The coating shall be used as recommended in the manufacturer's printed or written instructions. Forms for Class C and D finished surfaces may be wet with water in lieu of coating immediately before placing concrete, except that in cold weather with probable freezing temperatures, coating shall be mandatory. Surplus coating on form surfaces and coating on reinforcing steel and construction joints shall be removed before placing concrete.

3.4 REMOVAL OF FORMS

Forms shall be removed preventing injury to the concrete and ensuring the complete safety of the structure. Formwork for columns, walls, side of beams and other parts not supporting the weight of concrete may be removed when the concrete has attained sufficient strength to resist damage from the removal operation but not before at least 24 hours has elapsed since concrete placement. Supporting forms and shores shall not be removed from beams, floors and walls until the structural units are strong enough to carry their own weight and any other construction or natural loads. Supporting forms or shores shall not be removed before the concrete strength has reached 70 percent of design strength, as determined by field cured cylinders or other approved methods. This strength shall be demonstrated by job-cured test specimens, and by a structural analysis considering the proposed loads in relation to these test strengths and the strength of forming and shoring system. The job-cured test specimens for form removal purposes shall be provided in numbers as directed and shall be in addition to those required for concrete quality control. The specimens shall be removed from molds at the age of 24 hours and shall receive, insofar as possible, the same curing and protection as the structures they represent.

3.5 RESHORING

No construction loads shall be supported on, nor any shoring removed from, any part of the structure under construction except when that portion of the structure in combination with remaining forming and shoring system has sufficient strength to safely support its weight and loads placed thereon. While reshoring is underway, no superimposed dead or live loads shall be permitted on the new construction. During reshoring do not subject concrete in structural members to combined dead and construction loads in excess of loads that structural members can adequately support. Place reshores as soon as practicable after stripping operations are complete but in no case later than end of working day on which stripping occurs. Tighten reshores to carry their required loads without overstressing. Where no reshoring is planned, leave forms and shoring used to support weight of concrete in place until concrete has attained its specified

28-day compressive strength. Where a reshoring procedure is planned, supporting formwork may be removed when concrete has reached the concrete strength required by the formwork designer's structural calculations. For floors supporting shores under newly placed concrete leave original supporting shores in place or reshore. Reshoring system shall have a capacity sufficient to resist anticipated loads. Locate reshores directly under a shore position above.

3.6 TOLERANCES FOR FORMED SURFACES

TABLE 1

TOLERANCES FOR FORMED SURFACES

1. Variations from the plumb:	In any 10 feet of length ----- 1/4 inch
a. In the lines and surfaces of columns, piers, walls and in arises	Maximum for entire length ----- 1/2 inch
b. For exposed corner columns, control-joint grooves, and other conspicuous lines	In any 20 feet of length ----- 1/4 inch Maximum for entire length----- 1/2 inch
2. Variation from the level or from the grades indicated on the drawings:	In any 10 feet of length -----1/4 inch In any bay or in any 20 feet of length----- 3/8 inch
a. In slab soffits, ceilings, beam soffits, and in arises, measured before removal of supporting shores	Maximum for entire length ----- 3/4 inch
b. In exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines	In any bay or in any 20 feet of length ----- 1/4 inch Maximum for entire length----- 1/2 inch
3. Variation of the linear building lines from established position in plan	In any 20 feet ----- 1/2 inch Maximum -----1 inch
4. Variation of distance between walls, columns, partitions	1/4 inch per 10 feet of distance, but not more than 1/2 inch in any one bay, and not more than 1/2 inch

TABLE 1

TOLERANCES FOR FORMED SURFACES

	total variation
5. Variation in the sizes and locations of sleeves, floor openings, and wall opening	Minus ----- 1/2 inch Plus ----- 1/2 inch
6. Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls	Minus ----- 1/4 inch Plus ----- 1/2 inch
7. Footings:	
a. Variation of dimensions in plan	Minus ----- 1/2 inch Plus ----- 2 inches when formed or plus 3 inches when placed against unformed excavation
b. Misplacement of eccentricity	2 percent of the footing width in the direction of misplacement but not more than 2 inches
c. Reduction in thickness of specified thickness	Minus ----- 5 percent Plus -----No limit except that which may interfere with other construction.
8. Variation in steps:	
a. In a flight of stairs	Riser ----- 1/8 inch Tread ----- 1/4 inch
b. In consecutive steps	Riser ----- 1/16 inch Tread ----- 1/8 inch

Establish and maintain in an undisturbed condition and until final completion and acceptance of Project, sufficient control points and bench marks to be used for reference purposes to check tolerances. Regardless of tolerances listed, allow no portion of structure to extend beyond legal boundary of Project. To maintain specified tolerances, camber formwork to compensate for anticipated deflections in formwork prior to hardening of concrete.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 03 - CONCRETE

SECTION 03150

EXPANSION JOINTS, CONTRACTION JOINTS, AND WATERSTOPS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DELIVERY AND STORAGE

PART 2 PRODUCTS

- 2.1 CONTRACTION JOINT STRIPS
- 2.2 PREFORMED EXPANSION JOINT FILLER
 - 2.2.1 Neoprene Expansion Joint Fillers
 - 2.2.2 Asphalt Expansion Joint Fillers
 - 2.2.3 Fiber Expansion Joint Fillers
- 2.3 SEALANT
 - 2.3.1 Preformed Polychloroprene Elastomeric Type
 - 2.3.2 Lubricant for Preformed Compression Seals
 - 2.3.3 Hot-Poured Type
 - 2.3.4 Field-Molded Type
- 2.4 WATERSTOPS
 - 2.4.1 Flexible Metal
 - 2.4.2 Non-Metallic Materials
 - 2.4.3 Non-Metallic Hydrophilic
 - 2.4.4 Preformed Elastic Adhesive
 - 2.4.4.1 Chemical Composition
 - 2.4.4.2 Adhesion Under Hydrostatic Pressure
 - 2.4.4.3 Sag of Flow Resistance
 - 2.4.4.4 Chemical Resistance

PART 3 EXECUTION

- 3.1 JOINTS
 - 3.1.1 General - Construction Joints
 - 3.1.2 Contraction Joints
 - 3.1.2.1 Sawed Joints
 - 3.1.2.2 Waste Disposal
 - 3.1.3 Expansion Joints
 - 3.1.4 Joint Sealant
 - 3.1.4.1 Joints With Preformed Compression Seals
 - 3.1.4.2 Joints With Field-Molded Sealant
- 3.2 WATERSTOPS, INSTALLATION AND SPLICES
 - 3.2.1 Copper And Stainless Steel

- 3.2.2 Non-Metallic
 - 3.2.2.1 Rubber Waterstop
 - 3.2.2.2 Polyvinyl Chloride Waterstop
 - 3.2.2.3 Quality Assurance
- 3.2.3 Non-Metallic Hydrophilic Waterstop Installation
- 3.2.4 Preformed Plastic Adhesive Installation
- 3.3 CONSTRUCTION JOINTS

-- End of Section Table of Contents --

SECTION 03150

EXPANSION JOINTS, CONTRACTION JOINTS, AND WATERSTOPS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO T 111 (1983; R 1996)) Inorganic Matter or Ash in Bituminous Materials

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.4 (1995) Basic Hardboard

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 109/A 109M (1998a) Steel, Strip, Carbon, Cold-Rolled

ASTM A 167 (1999) Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip

ASTM A 480/A 480M (1999b) General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip

ASTM A 570/A 570M (1998) Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality

ASTM B 152 (1997a) Copper Sheet, Strip, Plate, and Rolled Bar

ASTM B 152M (1997a) Copper Sheet, Strip, Plate, and Rolled Bar (Metric)

ASTM B 370 (1998) Copper Sheet and Strip for Building Construction

ASTM C 919 (1984; R 1998) Use of Sealants in

Acoustical Applications

ASTM C 920	(1998) Elastomeric Joint Sealants
ASTM D 4	(1986; R 1998) Bitumen Content
ASTM D 6	(1995) Loss on Heating of Oil and Asphaltic Compounds
ASTM D 412	(1998a) Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension
ASTM D 471	(1998el) Rubber Property - Effect of Liquids
ASTM D 1190	(1997) Concrete Joint Sealer, Hot-Applied Elastic Type
ASTM D 1191	(1984; R 1994el) Concrete Joint Sealers
ASTM D 1751	(1999) Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D 1752	(1984; R 1996el) Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM D 1854	(1996) Jet-Fuel-Resistant Concrete Joint Sealer, Hot-Poured Elastic Type
ASTM D 2628	(1991; R 1998) Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements
ASTM D 2835	(1989; R 1998) Lubricant for Installation of Preformed Compression Seals in Concrete Pavements
ASTM D 5249	(1995) Backer Material for Use With Cold and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
ASTM D 5329	(1996) Standard Test Method for Sealants and Fillers, Hot-Applied, for Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 513

(1974) Corps of Engineers Specifications
for Rubber Waterstops

COE CRD-C 572

(1974) Corps of Engineers Specifications
for Polyvinylchloride Waterstop

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Waterstops

Shop drawings and fabrication drawings provided by the manufacturer or prepared by the Contractor.

SD-03 Product Data

Preformed Expansion Joint Filler Sealant Waterstops

Manufacturer's literature, including safety data sheets, for preformed fillers and the lubricants used in their installation; field-molded sealants and primers (when required by sealant manufacturer); preformed compression seals; and waterstops.

Manufacturer's recommended instructions for installing preformed fillers, field-molded sealants; preformed compression seals; and waterstops; and for splicing non-metallic waterstops.

SD-04 Samples

Lubricant for Preformed Compression Seals

Specimens identified to indicate the manufacturer, type of material, size and quantity of material, and shipment or lot represented. Each sample shall be a piece not less than 9 ft of 1 inch nominal width or wider seal or a piece not less than 12 ft of compression seal less than 1 inch nominal width. One quart of lubricant shall be provided.

Field-Molded Type

One gallon of field-molded sealant and one quart of primer (when primer is recommended by the sealant manufacturer) identified to indicate manufacturer, type of material, quantity, and shipment or lot represented.

Non-metallic Materials

Specimens identified to indicate manufacturer, type of material, size, quantity of material, and shipment or lot represented. Each sample shall be a piece not less than 12 inch long cut from each 200 ft of finished waterstop furnished, but not less than a total of 4 ft of each type, size, and lot furnished. One splice sample of each size and type for every 50 splices made in the factory and every 10 splices made at the job site. The splice samples shall be made using straight run pieces with the splice located at the mid-length of the sample and finished as required for the installed waterstop. The total length of each splice shall be not less than 12 inches long.

SD-07 Certificates

Preformed Expansion Joint Filler
Sealant
Waterstops

Certificates of compliance stating that the joint filler and sealant materials and waterstops conform to the requirements specified.

1.3 DELIVERY AND STORAGE

Material delivered and placed in storage shall be stored off the ground and protected from moisture, dirt, and other contaminants. Sealants shall be delivered in the manufacturer's original unopened containers. Sealants whose shelf life has expired shall be removed from the site.

PART 2 PRODUCTS

2.1 CONTRACTION JOINT STRIPS

Contraction joint strips shall be 1/8 inch thick tempered hardboard conforming to AHA A135.4, Class 1. In lieu of hardboard strips, rigid polyvinylchloride (PVC) or high impact polystyrene (HIPS) insert strips specifically designed to induce controlled cracking in slabs on grade may be used. Such insert strips shall have removable top section.

2.2 PREFORMED EXPANSION JOINT FILLER

Expansion joint filler shall be preformed material conforming to ASTM D 1751 or ASTM D 1752. Unless otherwise indicated, filler material shall be 3/8 inch thick and of a width applicable for the joint formed. Backer material, when required, shall conform to ASTM D 5249.

2.2.1 Neoprene Expansion Joint Fillers

Materials: closed cell neoprene. ASTM D 1056, Class SC, 2 to 5 psi compression deflection, Grade SCE-41

2.2.2 Asphalt Expansion Joint Fillers

Materials: ASTM D 994

2.2.3 Fiber Expansion Joint Fillers

Materials: ASTM D 1751

2.3 SEALANT

Joint sealant shall conform to the following:

2.3.1 Preformed Polychloroprene Elastomeric Type

ASTM D 2628.

2.3.2 Lubricant for Preformed Compression Seals

ASTM D 2835.

2.3.3 Hot-Poured Type

ASTM D 1190 tested in accordance with ASTM D 1191.

2.3.4 Field-Molded Type

ASTM C 920, Type M for horizontal joints or Type NS for vertical joints, Class 25, and Use NT. Bond breaker material shall be polyethylene tape, coated paper, metal foil or similar type materials. The back-up material shall be compressible, non-shrink, nonreactive with sealant, and non-absorptive material type such as extruded butyl or polychloroprene rubber.

2.4 WATERSTOPS

Intersection and change of direction waterstops shall be shop fabricated, leaving only straight butt splices for the field.

2.4.1 Flexible Metal

Copper waterstops shall conform to ASTM B 152 and ASTM B 370, O60 soft anneal temper and 20 oz mass per sq ft sheet thickness. Stainless steel waterstops shall conform to ASTM A 167 and ASTM A 480/A 480M, UNS S30453 (Type 304L), and 20 gauge thick strip.

2.4.2 Non-Metallic Materials`

Non-metallic waterstops shall be manufactured from a prime virgin resin; reclaimed material is not acceptable. The compound shall contain plasticizers, stabilizers, and other additives to meet specified requirements. Rubber waterstops shall conform to COE CRD-C 513. Polyvinylchloride waterstops shall conform to COE CRD-C 572. Thermoplastic elastomeric rubber waterstops shall conform to ASTM D 471.

2.4.3 Non-Metallic Hydrophilic

Swellable strip type compound of polymer modified chloroprene rubber that swells upon contact with water shall conform to ASTM D 412 as follows: Tensile strength 420 psi minimum; ultimate elongation 600 percent minimum. Hardness shall be 50 minimum on the type A durometer and the volumetric expansion ratio in distilled water at 70 degrees F shall be 3 to 1 minimum.

2.4.4 Preformed Elastic Adhesive

Preformed plastic adhesive waterstops shall be produced from blends of refined hydrocarbon resins and plasticizing compounds reinforced with inert mineral filler, and shall contain no solvents, asbestos, irritating fumes or obnoxious odors. The compound shall not depend on oxidizing, evaporating, or chemical action for its adhesive or cohesive strength.

2.4.4.1 Chemical Composition

The chemical composition of the sealing compound shall meet the requirements shown below:

PERCENT BY WEIGHT			
COMPONENT	MIN.	MAX.	TEST
Bitumen (Hydrocarbon plastic)	50	70	ASTM D 4
Inert Mineral Filler	30	50	AASHTO T 111
Volatile Matter		2	ASTM D 6

2.4.4.2 Adhesion Under Hydrostatic Pressure

The sealing compound shall not leak at the joints for a period of 24 hours under a vertical 6 foot head pressure. In a separate test, the sealing compound shall not leak under a horizontal pressure of 10 psi which is reached by slowly applying increments of 2 psi every minute.

2.4.4.3 Sag of Flow Resistance

Sagging shall not be detected when tested as follows: Fill a wooden form 1 inch wide and 6 inches long flush with sealing compound and place in an oven at 135 degrees F in a vertical position for 5 days.

2.4.4.4 Chemical Resistance

The sealing compound when immersed separately in a 5% solution of caustic potash, a 5% solution of hydrochloric acid, 5% solution of sulfuric acid and a saturated hydrogen sulfide solution for 30 days at ambient room temperature shall show no visible deterioration.

PART 3 EXECUTION

3.1 JOINTS

Joints shall be installed at locations indicated and as authorized.

3.1.1.1 General - Construction Joints

Locate joints as indicated on Contract Drawings or as shown on approved shop drawings. Unplanned construction joints will not be allowed. If concrete cannot be completely placed between planned construction joints, then it must be removed. In general, locate joints near middle of spans of slabs, beams and girders unless a beam intersects a girder at this point, in which case, offset joint in girder a distance equal to twice the width of the beam. Locate joints in walls and columns at underside of floors, slabs, beams, or girders, and at tops of foundations or floor slabs, unless shown otherwise. At Contractor's option, beam pockets may be formed into concrete walls. Size pockets to allow beam reinforcing to be placed as detailed on Drawings. Place beams, girders, column capitals and drop panels at same time as slabs. Make joints perpendicular to main reinforcement with all reinforcement continuous across joints. Provide roughened construction joints at all construction joints unless indicated otherwise on Drawings. Clean the previously hardened concrete interface and remove all laitance. Intentionally roughen the interface to a full amplitude of 1/4 inch. Provide recessed flat surface as required to install strip type waterstops. Allow a minimum of 48 hours before placement of adjoining concrete construction.

3.1.1.2 Contraction Joints

Contraction joints may be constructed by cutting the concrete with a saw after concrete has set. Joints shall be approximately 1/8 inch wide and shall extend into the slab one-fourth the slab thickness, minimum, but not less than 1 inch.

3.1.1.2.1 Sawed Joints

Joint sawing shall be early enough to prevent uncontrolled cracking in the slab, but late enough that this can be accomplished without appreciable spalling. Concrete sawing machines shall be adequate in number and power, and with sufficient replacement blades to complete the sawing at the required rate. Joints shall be cut to true alignment and shall be cut in sequence of concrete placement. Sludge and cutting debris shall be removed.

3.1.1.2.2 Waste Disposal

The method used in disposing of wastewater employed in cutting, washing, and rinsing of concrete surfaces shall be such that the wastewater does not stain, discolor, or affect exposed surfaces of the structures, or damage the environment of the project area.

3.1.1.3 Expansion Joints

Do not permit reinforcement or other embedded metal items bonded to concrete (except smooth dowels bonded on only one side of joint) to extend continuously through an expansion joint. Use approved expansion joint fillers, unless noted otherwise on Drawings.

3.1.1.4 Joint Sealant

Sawed contraction joints and expansion joints in slabs shall be filled with joint sealant, unless otherwise shown. Joint surfaces shall be clean, dry, and free of oil or other foreign material which would adversely affect the bond between sealant and concrete. Joint sealant shall be applied as recommended by the manufacturer of the sealant.

3.1.4.1 Joints With Preformed Compression Seals

Compression seals shall be installed with equipment capable of installing joint seals to the prescribed depth without cutting, nicking, twisting, or otherwise distorting or damaging the seal or concrete and with no more than 5 percent stretching of the seal. The sides of the joint and, if necessary, the sides of the compression seal shall be covered with a coating of lubricant. Butt joints shall be coated with liberal applications of lubricant.

3.1.4.2 Joints With Field-Molded Sealant

Joints shall not be sealed when the sealant material, ambient air, or concrete temperature is less than 40 degrees F. When the sealants are meant to reduce the sound transmission characteristics of interior walls, ceilings, and floors the guidance provided in ASTM C 919 shall be followed.

Joints requiring a bond breaker shall be coated with curing compound or with bituminous paint. Bond breaker and back-up material shall be installed where required. Joints shall be primed and filled flush with joint sealant in accordance with the manufacturer's recommendations.

3.2 WATERSTOPS, INSTALLATION AND SPLICES

Waterstops shall be installed at the locations shown to form a continuous water-tight diaphragm. Adequate provision shall be made to support and completely protect the waterstops during the progress of the work. Any waterstop punctured or damaged shall be repaired or replaced. Exposed waterstops shall be protected during application of form release agents to avoid being coated. Suitable guards shall be provided to protect exposed projecting edges and ends of partially embedded waterstops from damage when concrete placement has been discontinued. Splices shall be made by certified trained personnel using approved equipment and procedures.

3.2.1 Copper And Stainless Steel

Splices in copper waterstops shall be lap joints made by brazing. Splices in stainless steel waterstops shall be welded using a TIG or MIG process utilizing a weld rod to match the stainless. All welds shall not be annealed to maintain physical properties. Carbon flame shall not be used in the annealing process. Damaged waterstops shall be repaired by removing damaged portions and patching. Patches shall overlap a minimum of 1 inch onto undamaged portion of the waterstop.

3.2.2 Non-Metallic

Fittings shall be shop made using a machine specifically designed to mechanically weld the waterstop. A miter guide, proper fixturing (profile dependant), and portable power saw shall be used to miter cut the ends to

be joined to ensure good alignment and contact between joined surfaces. The splicing of straight lengths shall be done by squaring the ends to be joined. Continuity of the characteristic features of the cross section of the waterstop (ribs, tabular center axis, protrusions, etc.) shall be maintained across the splice.

3.2.2.1 Rubber Waterstop

Splices shall be vulcanized or shall be made using cold bond adhesive as recommended by the manufacturer. Splices for TPE-R shall be as specified for PVC.

3.2.2.2 Polyvinyl Chloride Waterstop

Splices shall be made by heat sealing the adjacent waterstop edges together using a thermoplastic splicing iron utilizing a non-stick surface specifically designed for waterstop welding. The correct temperature shall be used to sufficiently melt without charring the plastic. The spliced area, when cooled, shall show no signs of separation, holes, or other imperfections when bent by hand in as sharp an angle as possible.

3.2.2.3 Quality Assurance

Edge welding will not be permitted. Centerbulbs shall be compressed or closed when welding to non-centerbulb type. Waterstop splicing defects which are unacceptable include, but are not limited to the following: 1) Tensile strength less than 80 percent of parent section. 2) Free lap joints. 3) Misalignment of centerbulb, ribs, and end bulbs greater than 1/16 inch. 4) Misalignment which reduces waterstop cross section more than 15 percent. 5) Bond failure at joint deeper than 1/16 inch or 15 percent of material thickness. 6) Misalignment of waterstop splice resulting in misalignment of waterstop in excess of 1/2 inch in 10 feet. 7) Visible porosity in the weld area, including pin holes. 8) Charred or burnt material. 9) Bubbles or inadequate bonding. 10) Visible signs of splice separation when cooled splice is bent by hand at a sharp angle.

3.2.3 Non-Metallic Hydrophilic Waterstop Installation

Ends to be joined shall be miter cut with sharp knife or shears. The ends shall be adhered with cyanacrylate (super glue) adhesive. When joining hydrophilic type waterstop to PVC waterstop, the hydrophilic waterstop shall be positioned as shown on the drawings. A liberal amount of a single component hydrophilic sealant shall be applied to the junction to complete the transition.

3.2.4 Preformed Plastic Adhesive Installation

The installation of preformed plastic adhesive waterstops shall be a prime, peel, place and pour procedure. Joint surfaces shall be clean and dry before priming and just prior to placing the sealing strips. The end of each strip shall be spliced to the next strip with a 1 inch overlap; the overlap shall be pressed firmly to release trapped air. During damp or cold conditions the joint surface shall be flashed with a safe, direct flame to warm and dry the surface adequately; the sealing strips shall be

dipped in warm water to soften the material to achieve maximum bond to the concrete surface.

3.3 CONSTRUCTION JOINTS

Construction joints are specified in Section 03300 CAST-IN-PLACE STRUCTURAL CONCRETE except that construction joints coinciding with expansion and contraction joints shall be treated as expansion or contraction joints as applicable.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 03 - CONCRETE

SECTION 03190

CONCRETE BRIDGES

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 DESCRIPTION OF WORK
- 1.3 DEFINITIONS
- 1.4 SUBMITTALS

PART 2 PRODUCTS

- 2.1 CONCRETE
 - 2.1.1 Mix Designations
 - 2.1.2 Aggregate
- 2.2 REINFORCEMENT BARS
- 2.3 STEEL FABRIC
- 2.4 SPIRAL REINFORCEMENT
- 2.5 PREFORMED JOINT FILLER
- 2.6 CONCRETE JOINT SEALER, HOT POURED TYPE
- 2.7 CONCRETE JOINT SEALER, PREFORMED TYPE
- 2.8 CONCRETE TREATING OIL
 - 2.8.1 Linseed Oil
- 2.9 GRANULAR MATERIALS
- 2.10 CAST-IN-PLACE CONCRETE PILES
 - 2.10.1 Steel Pile Shells
 - 2.10.2 Pile Concrete

PART 3 EXECUTION

- 3.1 BRIDGE APPROACH PANELS
 - 3.1.1 Reinforcement Bar
- 3.2 CONCRETE BRIDGE CONSTRUCTION
 - 3.2.1 Bridge Slab
 - 3.2.2 Placement of Concrete in High Abutments
 - 3.2.3 Joint and Crack Sealing
 - 3.2.3.1 Curing Period
 - 3.2.3.2 Preformed Joint
 - 3.2.4 Finish of Concrete
 - 3.2.4.1 Special Surface Finish
 - 3.2.4.2 Finishing Roadway Faces and Tops of Barrier Railing
 - 3.2.4.3 Architectural Surface Treatment
 - 3.2.4.4 Ordinary Surface Finish
- 3.3 STRIKE-OFF AND SCREEDING OF BRIDGE STRUCTURAL SLAB

- 3.4 PLACING SUBSEQUENT CONCRETE POURS
- 3.5 CURING BRIDGE DECK SLABS
- 3.6 EXPANSION JOINT DEVICES
- 3.7 BRIDGE SURFACE SEALING
- 3.8 STRUCTURE EXCAVATIONS AND BACKFILL
 - 3.8.1 Structure Excavation
 - 3.8.2 Foundation Prep
- 3.9 PILING
 - 3.9.1 Delivery and Inspection of Piling
 - 3.9.2 Pile Points
 - 3.9.3 Dynamic Monitoring of Pile Driving
- 3.10 STRUCTURAL CONCRETE
 - 3.10.1 Cement Content
- 3.11 CONCRETE WEARING COURSE FOR BRIDGES
 - 3.11.1 Concrete Wearing Course 3U17A
- 3.12 PRESTRESSED CONCRETE BEAMS
 - 3.12.1 Prestressed Concrete Fabricator Certification
 - 3.12.2 Steel Intermediate Diaphragms
- 3.13 DRAINAGE SYSTEM FOR HIGH ABUTMENTS
- 3.14 HIGH STRENGTH LOW ALLOY COLUMBIUM-VANADIUM STEEL
- 3.15 STRUCTURAL METALS
 - 3.15.1 Certification
 - 3.15.2 Warped or Deformed Metal
 - 3.15.3 Shear Stud Connectors or Similar
- 3.16 STEEL SHELLS FOR CONCRETE PILING
 - 3.16.1 Strength and Chemical Requirements
 - 3.16.2 Piling Surplus Materials
- 3.17 ELASTOMERIC BEARING PADS

-- End of Section Table of Contents --

SECTION 03190

CONCRETE BRIDGES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

MINNESTOA DEPARTMENT OF TRANSPORTATION (Mn/DOT)

Mn/DOT 2201	Concrete Base
Mn/DOT 2301	Concrete Pavement
Mn/DOT 2401	Concrete Bridge Construction
Mn/DOT 2402	Steel Bridge Construction
Mn/DOT 2404	Concrete Wearing Course for Bridges
Mn/DOT 2405	Prestressed Concrete Beams
Mn/DOT 2451	Structure Excavation and Backfills
Mn/DOT 2452	Piling
Mn/DOT 2461	Structural Concrete
Mn/DOT 2472	Metal Reinforcement
Mn/DOT 2502	Subsurface Drains
Mn/DOT 2506	Manholes and Catch Basins

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M153	(1984) Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
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AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)

1.2 DESCRIPTION OF WORK

The work shall consist of all labor, materials, and equipment necessary to construct three bridges in accordance with Mn/DOT Standard Specifications for Construction, the special provisions included in this Section, the Mn/DOT Bridge Manual, and the remainder of the contract documents. This Section is intended as a stand alone Section with respect to the technical and inspection portions of the bridge items of work. All applicable standards, references, materials, and testing requirements required for the bridge work are included in this Section and independent of the requirements listed in the other specification Sections. All contract administrative requirements shall be accomplished per the complete contract documents.

1.3 DEFINITIONS

The term "Engineer" referenced in Mn/DOT Standard Specification for Construction shall mean the "Contracting Officer."

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. All items shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-12 Bridge Submittals

Mn/DOT Submittal Requirements; G

All submittals for this Section shall be in accordance with the Mn/DOT requirements referenced within this Section and as determined by the Contracting Officer.

PART 2 PRODUCTS

2.1 CONCRETE

Concrete shall conform to the requirements of Mn/DOT 2461.

2.1.1 Mix Designations

Mix designations shall be as indicated in the Plans for the specific item of work.

2.1.2 Aggregate

The provisions of 2401.2A shall apply except as modified below:

Delete the second paragraph of 2401.2A and substitute the following therefor:

Class A Coarse Aggregate, as defined in 3137.2B, shall be used in all concrete for bridge superstructures, except that coarse aggregate requirements for precast concrete members fabricated under 2405 shall be as specified in 2461.2D.

2.2 REINFORCEMENT BARS

Reinforcement bars shall conform to the requirements of Mn/DOT 3301.

2.3 STEEL FABRIC

Steel fabric shall conform to the requirements of Mn/DOT 3303.

2.4 SPIRAL REINFORCEMENT

Spiral reinforcement bars shall conform to the requirements of Mn/DOT 3305.

2.5 PREFORMED JOINT FILLER

Preformed joint filler shall conform to the requirements of Mn/DOT 3702.

2.6 CONCRETE JOINT SEALER, HOT POURED TYPE

Concrete joint sealer, hot poured type, shall conform to the requirements of Mn/DOT 3723.

2.7 CONCRETE JOINT SEALER, PREFORMED TYPE

Concrete joint sealer, preformed type, shall conform to the requirements of Mn/DOT 3721.

2.8 CONCRETE TREATING OIL

Concrete treating oil shall conform to the requirements of Mn/DOT 3917.

2.8.1 Linseed Oil

The linseed oil curing emulsion shall be in accordance with one of the following, or an approved equal.

A. "TK-L368 White" as manufactured by TK Products, 11400 West 47th Street, Minnetonka, Minnesota 55343.

B. "TRI-DAR 33/2" as manufactured by Tamms Industries Co., 3835 State Route 72, Kirkland, Illinois 60146.

C. "Lin-Seal White" as manufactured by W.R. Meadows Inc., P.O. Box 543, Elgin, Illinois 60121.

2.9 GRANULAR MATERIALS

Granular materials for special backfill, bedding, drain or filter purposes shall meet the requirements for the item of work as specified.

2.10 CAST-IN-PLACE CONCRETE PILES

2.10.1 Steel Pile Shells

Steel pile shells shall conform to the requirements of Mn/DOT 3371.

2.10.2 Pile Concrete

Concrete, Mix No. 1C62 shall conform to the requirements of Mn/DOT 2461.

PART 3 EXECUTION

3.1 BRIDGE APPROACH PANELS

This work shall consist of furnishing all materials, labor, and equipment required to construct the bridge approach panels detailed in the Plans. The work shall be performed in accordance with all applicable provisions of Mn/DOT 2201, Mn/DOT 2301, Mn/DOT 2502, Mn/DOT 2506 and the referenced standard detail plates.

3.1.1 Reinforcement Bar

Reinforcement bars shall be epoxy coated in accordance with Mn/DOT 3301.

3.2 CONCRETE BRIDGE CONSTRUCTION

This work shall be performed in accordance with the provisions of Mn/DOT 2401.

3.2.1 Bridge Slab

For Bridge No. 84530, the finishing machine shall operate such that the longitudinal axis of the machine is generally parallel to the centerline of bearings of the substructure units.

3.2.2 Placement of Concrete in High Abutments

To reduce the effects of shrinkage in abutment concrete, there shall be a 72 hour delay between concrete pours of adjacent sections that have vertical construction joints.

3.2.3 Joint and Crack Sealing

3.2.3.1 Curing Period

Modify the provisions of 2401.3.J1 as follows: Prior to installation of sealing materials, concrete curing shall be completed. A minimum of 7 days drying is required prior to application of sealers. Sawcut joints shall be sandblasted and blown clean and the concrete surfaces shall be dry at the time sealer is installed.

3.2.3.2 Preformed Joint

Preformed joint shall be as detailed in the Plans and in conformance with the following requirements.

1. Bituminous felt shall comply with AASHTO M33, modified to the extent that the load required to compress the test specimen to 50 percent of its thickness before test shall be not more than 1200 psi.
2. Cork shall comply with Mn/DOT 3702 and AASHTO M153 Type II.
3. Polystyrene shall comply with the following:

Type	Minimum Compressive Strength (5 percent deflection)	Characteristics
A	30 psi	Closed Cell Expanded Polystyrene
B	10 psi	Molded Polystyrene

Testing for compressive strength of polystyrene shall be in accordance with ASTM D 1621. The CONTRACTOR shall, if requested by the Contracting Officer, furnish evidence that the material meets these requirements.

The list of preformed joint filler materials shown in the Plans is given for the CONTRACTOR's convenience only. Any additional joint filler required as shown on the Plans shall be furnished by the CONTRACTOR with no additional compensation.

3.2.4 Finish of Concrete

3.2.4.1 Special Surface Finish

The provisions of Mn/DOT 2401.3F2C shall apply except as modified herein:

A special surface finish will be required on the exposed concrete surfaces as designated below for Bridge Nos. 84528, 84529 and 84530.

A special surface finish as described below will be required on the following formed concrete surfaces:

- Outside surfaces of barrier railing
- Outside surfaces of fascia beams
- Wingwalls
- Copings
- Edges of slabs
- Bottom of overhangs
- Abutments

The concrete to which the special surface finish is to be applied must be a minimum of 28 days old. All surfaces that are to receive a special surface finish shall be thoroughly flushed with clean water not more than 24 hours before commencing with the finishing.

The finish color for all special surface finish, except rustications and fascia beams, shall match Federal Standard 595 B No. 33690 light tan. Rustications and fascia beams shall match Federal Standard 595 B No. 33448 tan. Paint shall be free of toxic metals and shall not contain toxic pigments.

Provide a test area, 3 foot x 3 foot, for each final color selection. The final color selections must be approved by the Contracting Officer.

3.2.4.2 Finishing Roadway Faces and Tops of Barrier Railing

1. The roadway faces and tops of barrier railings, if conventionally formed, shall be finished in accordance with 2401 .3F2d except as follows:

- a) Concrete placement, form removal, and finishing operations shall be planned and executed so that the surface finishing can be started immediately after forms are removed. The roadway face forms may be removed as soon as the concrete can retain its molded shape. However, in no case shall the elapsed time between concrete placement and initial surface finishing exceed 24 hours.

2. The roadway faces and tops of barrier railings, if slipformed, shall be finished in accordance with the following:

- a) The railing shall be lightly broomed immediately after passage of the slipformer.

3.2.4.3 Architectural Surface Treatment

Architectural surface treatment shall be applied to areas indicated in the plans. Rustications shall be formed integral with the concrete member and to the dimensions shown in the Plans

3.2.4.4 Ordinary Surface Finish

Add the following to the fourth paragraph of 2401.3F2a:

At locations where surface is not exposed or where the Contracting Officer determines that the appearance of the completed structure will not be adversely affected, cavities caused by removal of falsework brackets, form ties or hanger rods may be filled with an approved silicone caulk. The cavities shall be thoroughly cleaned prior to filling with caulk.

3.3 STRIKE-OFF AND SCREEDING OF BRIDGE STRUCTURAL SLAB

The provisions of 2401.3F3b, which pertain to strike off and screeding of bridge structural slabs for Bridge Nos. 84529 and 84530 are modified herein:

Screed guides are not required for templates used for strike-off and screeding of bridge structural slabs; however, if screed guides are used, they shall meet the requirements of this specification. Templates supported on slab reinforcement bars will not be permitted unless all of the following requirements are met:

A. Templates

The template shall be a product fabricated for the intended purpose by a manufacturer with at least 10 years experience. If template length exceeds 24 feet, the Contractor shall demonstrate to the Engineer that satisfactory adjustment can be made for crown breaks. Attached vibrators shall be evenly distributed across template length and vibration shall shut off automatically when forward motion stops.

B. Template Supports

Supports for templates shall be spaced to provide no appreciable sag in the template.

Portions of template supports in contact with reinforcement shall consist of round tubes or rods with a smooth, low friction surface. Skis shall have a minimum length of 5 feet and shall have a gradual "turn up" nose sufficient to prevent entrapment in reinforcement.

Transverse reinforcement bars shall be supported within 6 inches of the location where template support skis will ride.

C. Operations

A manual or powered winch shall provide forward advancement of the template. Winch cables shall not be anchored to reinforcement bars. Attachments to beams (shear studs, stirrups or lifting cables) may be utilized.

Concrete shall be spread and leveled in front of template so as not to cause "float" or overriding.

D. Reinforcement

Top reinforcement shall be securely tied and rigidly supported. Prior to beginning placement of concrete, the Contractor shall demonstrate that equipment and methods to be used will not damage or displace reinforcement bars. Any visible deflections of reinforcement will require additional bar supports and/or additional supports for template.

3.4 PLACING SUBSEQUENT CONCRETE POURS

Add the following paragraph before the third paragraph of 2401.3G:

When a permissible construction joint is shown, subsequent concrete placement may begin before the curing period has been completed, unless otherwise specified in the plan.

3.5 CURING BRIDGE DECK SLABS

Delete the first sentence of the 11th paragraph of 2401.3G and substitute the following:

After completion of the tine texturing for bridge deck slabs for Bridge No. 84528, and after free water has disappeared from the surface, the Contractor shall apply a white pigmented linseed oil curing emulsion.

3.6 EXPANSION JOINT DEVICES

The following consists of fabricating waterproof expansion devices in accordance with Mn/DOT 2402 and installing them at the locations shown in the Plan.

A. The Contractor shall:

1. Furnish a single diaphragm unreinforced neoprene gland whose physical and chemical properties conform to Mn/DOT 3721 except:

- (a) Do not use the requirements and test methods for the Compression-Deflection Characteristics and the Recovery Under Deflection specified in Mn/DOT 3721.2A3 and

- (b) Substitute Durometer requirement of 60, plus or minus 5, for that which is shown in Mn/DOT 3721.2A3.

2. Make the gland 1/4 inch thick, subject to a minimum thickness of 7/32 inch.

3. Submit 12 inches of seal material from each lot of material for testing, if required by the Contracting Officer.

4. Furnish certified test results from the manufacturer attesting to the physical and chemical properties of the expansion joint devices in accordance with Mn/DOT 1603. Provide copies of the test results to the Contracting Officer.

B. The Contractor shall provide one of the devices shown below or an approved equal. The components shall be in accordance with the physical and chemical properties shown in the brochure and drawing described below except as modified by these specifications.

1. "Wabo Strip Seal" as manufactured by Watson Bowman Acme Corporation and as detailed in Wabo Strip Seal System Product Data brochure dated 1995. Use Type A (previously designated A3) steel extrusion with SE Series neoprene gland.

2. "Steelflex® SSA2 Series" as manufactured by the D. S. Brown Company and as detailed in their 2000 SteelFlex Brochure. Use the A2R series neoprene gland. Joints shall be modified as detailed on the manufacturer's drawing dated 10-28-92: for joints with skews from 5 to 50 degrees, modify one rail by welding a ½" x 1½" backer bar at locations shown on Mn/DOT Fig. 5-397.628. Backer bar lengths shall be 4" for skews between 5 and 15 degrees, 5" if greater than 15 but not exceeding 35 degrees and 6½" over 35 degrees. When plow fingers are required by the plan, modify both

rails as detailed.

C. The Fabricator will be permitted to weld pre-galvanized sections of expansion device steel rail, complete with anchorages. If the steel rail is pre-galvanized, the Fabricator shall:

1. Provide roadway sections that are not less than 10 feet long.
2. Provide an anchorage within 9 inches of each end of the sections. This may require inclusion of additional anchorages.
3. Bevel abutting ends 1/4 inch on 3 edges and de-burr the edges.
4. Prepare the surfaces to be welded as per Mn/DOT 2471.3F5.
5. Groove weld the sections on 3 sides and take care to prevent weld metal from entering the gland groove.
6. Grind the weld smooth that is across the top of the extrusion.
7. Repair the welded surface as per Mn/DOT 2471.3L1.

D. Unless the gland is shop installed, the Fabricator shall install filler material in the gland groove in the steel rail to protect against entry of dirt and debris. Filler material shall be installed at the fabrication shop prior to storage or transportation of completed expansion device.

E. The Contractor shall:

1. Remove filler material and clean all neoprene to steel contact areas of all dirt, oil, grease, or other contaminants before installing the neoprene gland.
2. Lightly sandblast the contact areas so as to roughen but not damage the galvanized surface just before applying the lubricant adhesive.
3. Apply lubricant adhesive on both neoprene and steel contact areas when installing the gland.
4. Install the gland with tools recommended by the manufacturer for gland installation (use of other tools is prohibited).

F. Lubricant Adhesive - The lubricant adhesive shall conform to the requirements of ASTM D 4070. The Contractor may supply one of the following brands or an approved equal.

1. Delastibond part no. 1520 as supplied by the D.S. Brown Co.
2. Prima-Lub as supplied by the Watson Bowman Acme Corp.
3. Lube Plus 4070 as manufactured by The Spray Cure Co.

4. Neoprene Adhesive D 4070?81 as manufactured by Pacific Polymers Inc.

G. All expansion joint cover plates on pedestrian bridges and sidewalk areas shall be raised pattern plate.

3.7 BRIDGE SURFACE SEALING

Bridge surface sealing shall consist of preparation, furnishing, and applying the surface sealer to designated areas, consisting of the bridge roadway surface, approach panels, and exposed faces of the concrete railings.

Due to the hazardous ingredients contained in formulations including silane, extreme care must be exercised in their handling and use, and the manufacturer's recommendations shall be closely followed.

Surface sealer formulations shall be one of the following or an approved equal:

1. Fosroc Nitocote Dekguard P-40, as manufactured by Harris Specialty Chemicals, Inc., 10245 Centurion Parkway North, Jacksonville, FL 32256-0555, (904) 996-6342. This formulation is based on oligomeric alkoxy-siloxane/silane resins having solids in mineral spirits or alcohol. Formulation P-40 includes 40% solids.
2. Hydrozo Enviroseal a water based silane with 40% solids, as manufactured by Harris Specialty Chemicals, Inc., 10245 Centurion Parkway North, Jacksonville, FL 32256-0555, (904) 996-6342.
3. Hydrozo Silane 40 a solvent based silane with 40% solids, as manufactured by Harris Specialty Chemicals, Inc., 10245 Centurion Parkway North, Jacksonville, FL 32256-0555, (904) 996-6342.

Construction Requirements

1. The CONTRACTOR shall comply with the manufacturer's written instructions for preparing, handling and applying the surface sealer.
2. The surface to be treated shall receive a light sandblast, shotblast or waterblast to the extent that the surface is clean and free of oils.
3. Before the surface sealer is applied, the surface to be sealed shall be dry and free of all dust and debris.
4. Surface sealers shall be applied at 100 ft² per gallon minimum unless higher minimum rates are specified by the manufacturer.
5. The surface shall be kept clean until the sealer has dried. Traffic shall not be permitted on the sealed surfaces for at least 40 minutes following application of the sealer or until the surfaces are dry.

6. Surface sealer shall not be applied to fresh concrete until it has cured for at least 14 days.

3.8 STRUCTURE EXCAVATIONS AND BACKFILL

This work shall be performed in accordance with the provisions of Mn/DOT 2451.

3.8.1 Structure Excavation

The item Structure Excavation shall include all excavation, sheeting and shoring and/or other protection, and placing of backfill necessary for construction of each bridge. It shall also include the disposal of surplus material.

3.8.2 Foundation Prep

Each item of work Foundation Preparation Abutment shall consist of furnishing all material for and performing all work involved in the preparation of the foundation for each of the abutments designated. Each item shall include, but not be limited to, earth excavation below the water line and all other work such as coffer dam construction, concrete seals, pumping, removal of the coffer dam, backfilling the excavation, and disposal of surplus excavated materials as may be necessary.

3.9 PILING

This work shall be performed in accordance with the provisions of Mn/DOT 2452.

3.9.1 Delivery and Inspection of Piling

The provisions of 2452.3A shall apply except as modified below:

Delete the last sentence of the second paragraph and the entire third paragraph.

Delete the first sentence of the fourth paragraph and substitute with the following:

Piling shall not be driven until the material has been accepted on the basis of mill test reports.

3.9.2 Pile Points

This work consists of furnishing pile points for cast-in-place concrete piles in lieu of flat driving shoes and shall be performed in accordance with the following:

The first paragraph of 2452.3D6 shall not apply to piles equipped with conical pile points.

The bottom of each shell shall be equipped with a commercially manufactured conical pile point of cast steel, which shall be attached to the pile in

accordance with the manufacturer's recommendations and made watertight by welding.

The pile point shall be approved by the Contracting Officer prior to attachment to the pile.

Pile points are required on all piles on Bridge Nos. 84528, 84529 and 84530.

3.9.3 Dynamic Monitoring of Pile Driving

Dynamic monitoring of test piling may be conducted by the Contracting Officer in accordance with ASTM D 4945 (High-Strain Dynamic Testing of Piles) on Bridge Numbers 84528, 84529, 84530. It is anticipated that 2 test piles of each bridge in this project may be monitored. The piles to be monitored will be selected by the Contracting Officer.

Dynamic monitoring consists of attaching strain transducers and accelerometers to the pile, usually close to the pile head, and connecting these to a monitoring station on the ground by means of a cable. Installation of dynamic monitoring equipment will require approximately one hour per pile. Care must be taken to ensure that no damage is done to the transducers, cables or equipment during pile driving.

In order to attach the instrumentation needed for the pile driving analyzer, the Contractor shall make each designated pile available for preparation to install instrumentation prior to placing the pile in the leads. The Contractor shall provide a reasonable means of access for the Engineer to attach the instruments after the pile is placed in the leads and prior to being struck with the pile-driving hammer. If directed by the Engineer, the Contractor shall attach instrumentation but will not be required to prepare the pile for instrumentation.

Designated piling will be monitored during the initial driving and during redriving. Piles designated for redriving shall not be driven past an elevation of 48 inches above cutoff and they shall not be filled with concrete until authorized by the Contracting Officer. The required delay between the initial driving and the redriving will be a minimum of 24 hours and a maximum of 48 hours. Redriving will not exceed 20 hammer blows per pile.

3.10 STRUCTURAL CONCRETE

The provisions of Mn/DOT 2461 shall apply.

3.10.1 Cement Content

Add the following to Item (c) in the fourth paragraph of 2461.3B2:

The minimum cement content for bridge deck concrete shall be 611 pounds per cubic yard.

3.11 CONCRETE WEARING COURSE FOR BRIDGES

This work shall be performed in accordance with the provisions of Mn/DOT

2404 except as modified below:

3.11.1 Concrete Wearing Course 3U17A

The provisions of 2404 shall apply except as modified herein.

Add the following to 2404.2B:

The substitution of Ground Granulated Blast Furnace Slag Cement is not permitted regardless of any other provision of the Contract.

Delete the last sentence of the 13th paragraph of 2404.3A and substitute the following:

Concrete wearing course placement widths exceeding 24 feet will not be authorized.

3.12 PRESTRESSED CONCRETE BEAMS

This work shall be performed in accordance with the provisions of Mn/DOT 2405 except as modified below:

3.12.1 Prestressed Concrete Fabricator Certification

Fabrication of prestressed concrete bridge beams shall be performed in a precast/prestressed concrete fabrication plant which has been granted Certification by the Precast/Prestressed Concrete Institute, or approved equal.

The Fabricator's quality control office shall maintain documentation containing the data required by the specifications and the State Materials Engineer. This documentation shall contain test data and measurements taken at times and locations approved by the Contracting Officer, assuring that monitoring, by personnel not directly involved in production, is sufficient to ensure compliance with approved procedures.

If the Contracting Officer's review of fabrication work discloses that approved procedures are not being followed, the Fabricator shall immediately correct the procedure.

The Contracting Officer will determine what additional testing work must be done by the Fabricator or, if necessary, what part of the work must be repaired or replaced if fabrication work is not properly monitored and documented by the Fabricator.

Any and all costs of required additional monitoring and testing shall be at the expense of the Contractor with no additional compensation.

3.12.2 Steel Intermediate Diaphragms

In lieu of providing the steel intermediate diaphragm shown in detail B403

of the plans, the Contractor may substitute a bent plate diaphragm. The bent plate diaphragm shall be made of 5/16" thickness plate bent as shown in detail B402 of Mn/DOT Bridge Details Manual. The minimum depth for diaphragm shall be dimension "C" shown in B403; minimum flange width shall be 5".

3.13 DRAINAGE SYSTEM FOR HIGH ABUTMENTS

The following provision applies to Bridge No. 84529.

This work shall consist of the construction of subsurface drains for high abutments, installed to intercept and carry off underground water. It shall include all appurtenances, including geotextiles, metal oversleeves with rodent screens, and precast concrete headwalls. The work shall be performed in accordance with applicable provisions of 2502, 3245, 3733 and as detailed in the Plans.

3.14 HIGH STRENGTH LOW ALLOY COLUMBIUM-VANADIUM STEEL

The provisions of 3310.2 shall apply except as modified below:

The first paragraph of 3310.2 is hereby deleted and the following substituted therefore:

Shapes, plates, and bars furnished under this Specification shall conform to ASTM A709, Grade 50, and 3308.

3.15 STRUCTURAL METALS

The provisions of Mn/DOT 2471 shall apply.

3.15.1 Certification

For all Major Structural Components, the fabricator shall indicate, by writing or ink stamp on any certified mill test report furnished, that the report has been checked for compliance with the applicable specification. The name of the individual who checked the report shall be included.

3.15.2 Warped or Deformed Metal

Delete the first paragraph of 2471.3E2e and substitute the following:

Warped or deformed plates or flanges shall be machine finished or straightened by an approved method to provide the proper fit. Surfaces that will be in contact bearing with other structural parts shall be machined finished as required to achieve full contact for all parts. Full contact shall be defined as surface flatness that is less than .005 x nominal thickness dimension of the part.

3.15.3 Shear Stud Connectors or Similar

Delete the first and second sentence of 2471.3D2 and substitute the

following:

In accordance with OSHA Subpart R 1926.754 shear stud connectors or other similar devices shall not be attached to the top flange of beams, or other steel components, until after the decking falsework, or other walking surface, has been installed.

3.16 STEEL SHELLS FOR CONCRETE PILING

The provisions of 3371.2 shall apply.

3.16.1 Strength and Chemical Requirements

The first paragraph of 3371.2 is hereby deleted and the following substituted therefore:

The steel shells for cast-in-place concrete piles shall be manufactured within the physical strength and chemical requirements of ASTM A 252, Grade 2 or 3; except that when fluted shells are included as an alternative they shall be cold-rolled fluted steel shells conforming to SAE 1010 or SAE 1015, with a minimum tensile yield strength of the fabricated section of not less than 345 Mpa (50,000 psi), as determined in accordance with ASTM A 370.

3.16.2 Piling Surplus Materials

Add the following to 3371.3:

The use of small quantities of piling from the CONTRACTOR's surplus of cut-offs and overruns may be submitted for use and approved by the Contracting Officer. These materials shall be certified by the CONTRACTOR to be remaining quantities of materials previously submitted with accompanying Mill Test Reports and subsequently approved for use on other projects. Pile splices used to make up authorized pile lengths shall be considered to have been made at the CONTRACTOR's convenience and shall not be considered eligible for extra compensation under 2452.4B.

3.17 ELASTOMERIC BEARING PADS

The provisions of 3741 shall apply except as modified below:

The last paragraph of 3741.2A is hereby deleted and the following substituted therefore:

Tolerances for dimensions and configurations shall be in accordance with Division II, Section 18.5 of the AASHTO Standard Specifications for Highway Bridges, except that the elastomer cover over the top and bottom steel plates shall have a thickness of 1/4 inch plus 1/8 inch or minus 1/16 inch).

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 03 - CONCRETE

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 WELDING
- 1.4 DELIVERY AND STORAGE

PART 2 PRODUCTS

- 2.1 DOWELS
- 2.2 REINFORCING STEEL
- 2.3 WELDED WIRE FABRIC
- 2.4 WIRE TIES
- 2.5 SUPPORTS
- 2.6 SYNTHETIC FIBER REINFORCEMENT
- 2.7 FABRICATION
 - 2.7.1 Tolerances

PART 3 EXECUTION

- 3.1 REINFORCEMENT
 - 3.1.1 Placement
 - 3.1.2 Splicing
 - 3.1.3 Rebar Support
 - 3.1.4 Adhesive Anchors
 - 3.1.5 Tolerances
- 3.2 WELDED-WIRE FABRIC PLACEMENT
- 3.3 DOWEL INSTALLATION
- 3.4 SYNTHETIC FIBER REINFORCED CONCRETE
- 3.5 FIELD QUALITY CONTROL
 - 3.5.1 Reinforcement Congestion and Interferences

-- End of Section Table of Contents --

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 318/318R	(1995) Building Code Requirements for Structural Concrete and Commentary
ACI 318M	(1995) Building Code Requirements for Structural Concrete and Commentary (Metric)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53	(1999) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 82	(1997a) Steel Wire, Plain, for Concrete Reinforcement
ASTM A 184/A 184M	(1996) Fabricated Deformed Steel Bar Mats for Concrete Reinforcement
ASTM A 185	(1997) Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
ASTM A 496	(1997) Steel Wire, Deformed, for Concrete Reinforcement
ASTM A 497	(1997) Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement
ASTM A 615/A 615M	(1996a) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A 675/A 675M	(1990a; R 1995e1) Steel Bars, Carbon, Hot-Wrought, Special Quality, Mechanical Properties
ASTM A 706/A 706M	(1998) Low-Alloy Steel Deformed and Plain

Bars for Concrete Reinforcement

ASTM A 767/A 767M	(1997) Zinc-Coated (Galvanized) Steel Bars in Concrete Reinforcement
ASTM A 775/A 775M	(1997e1) Epoxy-Coated Reinforcement Steel Bars
ASTM A 884/A 884M	(1996ae1) Epoxy-Coated Steel Wire and Welded Wire Fabric for Reinforcement
ASTM C 1116	(1995) Fiber-Reinforced Concrete and Shotcrete

AMERICAN WELDING SOCIETY (AWS)

AWS D1.4	(1998) Structural Welding Code - Reinforcing Steel
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CONCRETE REINFORCING STEEL INSTITUTE (CRSI)

CRSI MSP-1	(1996) Manual of Standard Practice
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1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

ReinforcementG, AE

Detail drawings showing reinforcing steel placement, schedules, sizes, grades, and splicing and bending details. Drawings shall show support details including types, sizes and spacing.

SD-03 Product Data

Welding

A list of qualified welders names.

SD-07 Certificates

Reinforcing Steel

Certified copies of mill reports attesting that the reinforcing steel furnished contains no less than 25 percent recycled scrap steel and meets the requirements specified herein, prior to the installation of reinforcing steel.

1.3 WELDING

Welders shall be qualified in accordance with AWS D1.4. Qualification test shall be performed at the worksite and the Contractor shall notify the Contracting Officer 24 hours prior to conducting tests. Special welding procedures and welders qualified by others may be accepted as permitted by AWS D1.4. Welders to have been qualified during the previous 12 months prior to commencement of welding.

1.4 DELIVERY AND STORAGE

Reinforcement and accessories shall be stored off the ground on platforms, skids, or other supports.

PART 2 PRODUCTS

2.1 DOWELS

Dowels shall conform to ASTM A 675/A 675M, Grade 80. Steel pipe conforming to ASTM A 53, Schedule 80, may be used as dowels provided the ends are closed with metal or plastic inserts or with mortar.

2.2 REINFORCING STEEL

Reinforcing steel shall be deformed bars conforming to ASTM A 615/A 615M or ASTM A 706/A 706M, grades and sizes as indicated. Cold drawn wire used for spiral reinforcement shall conform to ASTM A 82.

2.3 WELDED WIRE FABRIC

Welded wire fabric shall conform to ASTM A 185 or ASTM A 497. When directed by the Contracting Officer for special applications, welded wire fabric shall conform to ASTM A 884/A 884M.

2.4 WIRE TIES

Wire ties shall be 16 gauge or heavier black annealed steel wire.

2.5 SUPPORTS

Bar supports for formed surfaces shall be designed and fabricated in accordance with CRSI MSP-1 and shall be steel or precast concrete blocks. Precast concrete blocks shall have wire ties and shall be not less than 4 inches square when supporting reinforcement on ground. Precast concrete block shall have compressive strength equal to that of the surrounding concrete. Where concrete formed surfaces will be exposed to weather or where surfaces are to be painted, steel supports within 1/2 inch of concrete surface shall be galvanized, plastic protected or of stainless steel. Concrete supports used in concrete exposed to view shall have the same color and texture as the finish surface. For slabs on grade, supports shall be precast concrete blocks, plastic coated steel fabricated with bearing plates, or specifically designed wire-fabric supports fabricated of plastic.

2.6 SYNTHETIC FIBER REINFORCEMENT

Synthetic fiber shall be polypropylene with a denier less than 100 and a nominal fiber length of 2 inches.

2.7 FABRICATION

2.7.1 Tolerances

Tolerances: Sheared lengths: +/- 1 inch. Overall dimensions of stirrups, ties and spirals: +/- 1/2 inch. All other bends: +0 inch, -1/2 inch.

Minimum diameter of bends measured on the inside of the rebar to be as indicated in ACI 318 paragraph 7.2. Ship rebars to jobsite with attached plastic or metal tags. Place on each tag the mark number of the rebar corresponding to the mark number indicated on the shop drawing. Mark numbers on tags to be so placed that the numbers cannot be removed.

PART 3 EXECUTION

3.1 REINFORCEMENT

Reinforcement shall be fabricated to shapes and dimensions shown and shall conform to the requirements of ACI 318/318R. Reinforcement shall be cold bent unless otherwise authorized. Bending may be accomplished in the field or at the mill. Bars shall not be bent after embedment in concrete. Safety caps shall be placed on all exposed ends of vertical concrete reinforcement bars that pose a danger to life safety. Wire tie ends shall face away from the forms.

3.1.1 Placement

Reinforcement shall be free from loose rust and scale, dirt, oil, or other deleterious coating that could reduce bond with the concrete. Reinforcement shall be placed in accordance with ACI 318/318R at locations shown plus or minus one bar diameter (measured parallel with face of form).

Reinforcement shall not be continuous through expansion joints and shall be as indicated through construction or contraction joints. Concrete coverage (measured perpendicular to face of form) shall be as indicated or as required by ACI 318/318R.

3.1.2 Splicing

Splices of reinforcement shall conform to ACI 318/318R and shall be made only as required or indicated. Splicing shall be by lapping or by mechanical or welded butt connection; except that lap splices shall not be used for bars larger than No. 11 unless otherwise indicated. Welding shall conform to AWS D1.4. Welded butt splices shall be full penetration butt welds. Do not tack weld reinforcing. Have each welder place an approved identifying mark near each completed weld. Lapped bars shall be placed in contact and securely tied or spaced transversely apart to permit the embedment of the entire surface of each bar in concrete. Lapped bars shall not be spaced farther apart than one-fifth the required length of lap or 6 inches. Mechanical butt splices shall be in accordance with the

recommendation of the manufacturer of the mechanical splicing device. Butt splices shall develop 125 percent of the specified minimum yield tensile strength of the spliced bars or of the smaller bar in transition splices. Bars shall be flame dried before butt splicing. Adequate jigs and clamps or other devices shall be provided to support, align, and hold the longitudinal centerline of the bars to be butt spliced in a straight line.

3.1.3 Rebar Support

Support rebars and fasten together to prevent displacement by construction loads or placing of concrete. On ground, provide supporting concrete blocks or metal bar supports with bottom plate. Over formwork, provide chairs, runners, bolsters, spacers, hangers and other rebar support.

3.1.4 Adhesive Anchors

Embed rebars into hardened concrete utilizing adhesive anchor system specifically manufactured for such installation. Drill hole in concrete with diameter and depth as required to develop 125 percent of the yield strength of the bar according to manufacturer's requirements. Place adhesive in drilled hole. Insert rebar into hole and adhesive in accordance with manufacturer's instructions.

3.1.5 Tolerances

Rebar placement: Clear distance to formed surfaces: +1/4 inch. Minimum spacing between bars: -1/4 inch. Top bars in slabs and beams: Members 8 inch deep or less: +1/4 inch. Members between 8 inch and 2 feet deep: -1/4 inch, +1/2 inch. Members more than 2 feet deep: -1/4 inch, +1 inch. Crosswise of members: Spaced evenly within +/- 1 inch. Lengthwise of members: +/- 2 inches. Minimum clear distances between rebars: Beams, walls and slabs: Distance equal to rebar diameter or 1 inch, whichever is greater. Columns: Distance equal to 1-1/2 times the rebar diameter or 1-1/2 inch, whichever is greater. Beam and slab rebars shall be threaded through the column vertical rebars without displacing the column vertical rebars and still maintaining the clear distances required for the beam and slab rebars.

3.2 WELDED-WIRE FABRIC PLACEMENT

Welded-wire fabric shall be placed in slabs as indicated. Fabric placed in slabs on grade shall be continuous between expansion, construction, and contraction joints. Fabric placement at joints shall be as indicated. Lap splices shall be made in such a way that the overlapped area equals the distance between the outermost crosswires plus 2 inches. Laps shall be staggered to avoid continuous laps in either direction. Fabric shall be wired or clipped together at laps at intervals not to exceed 4 feet. Fabric shall be positioned by the use of supports.

3.3 DOWEL INSTALLATION

Dowels shall be installed in slabs on grade at locations indicated and at right angles to joint being doweled. Dowels shall be accurately positioned and aligned parallel to the finished concrete surface before concrete

placement. Dowels shall be rigidly supported during concrete placement. One end of dowels shall be coated with a bond breaker.

3.4 SYNTHETIC FIBER REINFORCED CONCRETE

Fiber reinforcement shall be added to the concrete mix in accordance with the applicable sections of ASTM C 1116 and the recommendations of the manufacturer, and in an amount of 0.1 percent by volume.

3.5 FIELD QUALITY CONTROL

3.5.1 Reinforcement Congestion and Interferences

Notify Contracting Officer whenever the specified clearances between rebars cannot be met. Do not place any concrete until the Contracting Officer submits a solution to rebar congestion problem. Rebars may be moved as necessary to avoid interference with other reinforcing steel, conduits, or embedded items. If rebars are moved more than one bar diameter, obtain Contracting Officer's approval of resulting arrangement of rebars. No cutting of rebars shall be done without written approval of Contracting Officer.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 03 - CONCRETE

SECTION 03300

CAST-IN-PLACE STRUCTURAL CONCRETE

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 QUALIFICATIONS
- 1.4 CONSTRUCTION TOLERANCES
 - 1.5.1 Appearance
- 1.5 STORAGE OF MATERIALS
- 1.6 GOVERNMENT ASSURANCE INSPECTION AND TESTING

PART 2 PRODUCTS

- 2.1 GENERAL CONCRETE REQUIREMENTS
 - 2.1.1 Strength Requirements
 - 2.1.2 Slump
 - 2.1.3 Admixtures
 - 2.1.3.1 Air Entrainment
 - 2.1.4 Size of Coarse Aggregate
- 2.2 CEMENTITIOUS MATERIALS
 - 2.2.1 Portland Cement
 - 2.2.2 Pozzolan (Fly Ash)
 - 2.2.3 Ground Granulated Blast-Furnace (GGBF) Slag
- 2.3 AGGREGATES
 - 2.3.1 Composition
 - 2.3.2 Quality
 - 2.3.3 Sources
- 2.4 CHEMICAL ADMIXTURES
- 2.5 CURING MATERIALS
 - 2.5.1 Impervious-Sheet
 - 2.5.2 Membrane-Forming Compound
 - 2.5.3 Burlap and Cotton Mat
- 2.6 WATER
- 2.7 GROUT
 - 2.7.1 Nonshrink Grout
 - 2.7.2 Epoxy Grout
- 2.8 BONDING AGENT
- 2.9 BONDING GROUT
- 2.10 PATCHING MORTAR
- 2.11 EPOXY ADHESIVE

PART 3 EXECUTION

- 3.1 CONCRETE FINISH SCHEDULE
- 3.2 PREPARATION FOR PLACING
 - 3.2.1 Soil Subgrades
 - 3.2.2 Embedded Items
- 3.3 CONCRETE PRODUCTION
 - 3.3.1 Concrete Mixers
 - 3.3.2 Site Mixed Concrete
- 3.4 TRANSPORTING CONCRETE TO PROJECT SITE
- 3.5 CONVEYING CONCRETE ON SITE
 - 3.5.1 Concrete Pumps
- 3.6 PLACING CONCRETE
 - 3.6.1 Depositing Concrete
 - 3.6.2 Consolidation
 - 3.6.3 Cold Weather Requirements
 - 3.6.4 Hot Weather Requirements
- 3.7 JOINTS
 - 3.7.1 Construction Joints
 - 3.7.1.1 Preparation for Construction Joints
 - 3.7.2 Preparation for Surface Repairs
 - 3.7.3 Slabs on Grade
 - 3.7.3.1 Construction Joints for slabs on Grade
 - 3.7.3.2 Contraction Joints for slabs
 - 3.7.4 Waste Disposal
- 3.8 FINISHING FORMED SURFACES
- 3.9 FINISHING UNFORMED SURFACES
 - 3.9.1 General
 - 3.9.2 Rough Slab Finish
 - 3.9.3 Floated Finish
 - 3.9.4 Troweled Finish
 - 3.9.5 Broomed Finish
- 3.10 CURING AND PROTECTION
 - 3.10.1 General
 - 3.10.2 Moist Curing
 - 3.10.3 Membrane Forming Curing Compounds
 - 3.10.4 Impervious Sheeting
 - 3.10.5 Ponding or Immersion
- 3.11 GROUT
 - 3.11.1 Grout Schedule of Use
 - 3.11.2 Grout Installation
- 3.12 TESTING AND INSPECTION FOR CONTRACTOR QUALITY CONTROL
 - 3.12.1 Grading and Corrective Action
 - 3.12.1.1 Fine Aggregate
 - 3.12.1.2 Coarse Aggregate
 - 3.12.2 Concrete Mixture
 - 3.12.3 Inspection Before Placing
 - 3.12.4 Cold-Weather Protection
 - 3.12.5 Reports

-- End of Section Table of Contents --

SECTION 03300

CAST-IN-PLACE STRUCTURAL CONCRETE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 117/117R	(1990; Errata) Standard Tolerances for Concrete Construction and Materials
ACI 211.1	(1991) Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 214.3R	(1988) Simplified Version of the Recommended Practice for Evaluation of Strength Test Results of Concrete
ACI 301	(1996) Standard Specifications for Structural Concrete
ACI 305R	(1991) Hot Weather Concreting
ACI 306R	(1988) Cold Weather Concreting
ACI 309R	(1996) Consolidation of Concrete

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 182	(1991; R 1996) Burlap Cloth Made From Jute or Kenaf
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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 31	(1998) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(1999) Concrete Aggregates
ASTM C 39	(1996) Compressive Strength of Cylindrical

Concrete Specimens

ASTM C 94	(1999) Ready-Mixed Concrete
ASTM C 136	(1996a) Sieve Analysis of Fine and Coarse Aggregates
ASTM C 143	(1998) Slump of Hydraulic Cement Concrete
ASTM C 150	(1998) Portland Cement
ASTM C 171	(1997) Sheet Materials for Curing Concrete
ASTM C 172	(1999) Sampling Freshly Mixed Concrete
ASTM C 192	(1998) Making and Curing Concrete Test Specimens in the Laboratory
ASTM C 231	(1997) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(1998) Air-Entraining Admixtures for Concrete
ASTM C 309	(1998) Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 494	(1999) Chemical Admixtures for Concrete
ASTM C 591	(1994) Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation
ASTM C 595	(1998) Blended Hydraulic Cements
ASTM C 618	(1999) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 685	(1998) Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C 881	(1999) Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C 989	(1999) Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars
ASTM C 1017	(1998) Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C 1064	(1999) Temperature of Freshly Mixed Portland Cement Concrete
ASTM C 1077	(1998) Laboratories Testing Concrete and

Concrete Aggregates for Use in
Construction and Criteria for Laboratory
Evaluation

ASTM D 75	(1987; R 1997) Sampling Aggregates
ASTM D 1751	(1999) Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D 1752	(1984; R 1996) Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM E 96	(1995) Water Vapor Transmission of Materials

CORPS OF ENGINEERS (COE)

COE CRD-C 400	(1963) Requirements for Water for Use in Mixing or Curing Concrete
COE CRD-C 540	(1971; R 1981) Standard Specification for Nonbituminous Inserts for Contraction Joints in Portland Cement Concrete Airfield Pavements, Sawable Type
COE CRD-C 572	(1974) Corps of Engineers Specifications for Polyvinylchloride Waterstop

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

NIST HB 44	(1997) NIST Handbook 44: Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices
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NATIONAL READY-MIXED CONCRETE ASSOCIATION (NRMCA)

NRMCA TMMB 100	(1994) Truck Mixer Agitator and Front Discharge Concrete Carrier Standards
NRMCA CPMB 100	(1996) Concrete Plant Standards
NRMCA QC 3	(1984) Quality Control Manual: Section 3, Plant Certifications Checklist: Certification of Ready Mixed Concrete Production Facilities

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation;
submittals not having a "G" designation are for information only. When

used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Concrete Operation Plan; G, COR

The plan shall demonstrate a thorough understanding of all involved technical and logistical conditions necessary for the production of concrete that meets all requirements of these specifications. The plan shall provide as a minimum the following:

- a. Sources of cement, pozzolan, and aggregates.
- b. Location of aggregate stockpiles, batching plant, and mixing plant.
- c. Method and route for conveying batched concrete under all expected weather conditions.
- d. Method of conveying concrete within the project.
- e. Sources of electrical power and water.
- f. Provisions for replacement of required equipment in the event of breakdown.
- g. Methods for preventing aggregate stockpiles from freezing, moisture variation, or contamination.
- h. Methods of consolidation and curing. Include manufacturer's literature.
- i. Contractor quality control.
- j. Provisions for maintaining a working access or platform for lock personnel engaged in lock operations during placement and curing of concrete for horizontal repairs.

Cold Weather Plan; G, COR

If concrete is to be placed under cold weather conditions, the procedures, materials, methods, and protection proposed to accomplish it shall be submitted for review.

Hot Weather Plan; G, COR

If concrete is to be placed under hot weather conditions, the procedures, materials, methods, and protection proposed to accomplish it shall be submitted for review.

Joint Treatment Plan;

The methods and equipment proposed for joint cleanup and waste disposal shall be submitted for review.

SD-02 Shop Drawings

Shop Drawings; G, AE

Shop drawings shall be submitted on a continuing basis during the life of the contract. The drawings shall be shown at not less

than 1/4 inch equals 1 foot scale. The drawings shall show accurate concrete outlines and all types of joints. A numbering system shall be established to facilitate ready identification of each lift. The drawing shall cover in detail the design, construction, adjustment, and maintenance of the formwork and shall indicate all major design values of form materials to be used and the loading conditions on the form, including rate of concrete placement. Approval will not relieve the Contractor of responsibility of accuracy of the drawings or for the inclusion of all embedded items or other requirements specified herein.

SD-03 Product Data

Concrete Mixture Design; G, AE

A mix design shall be submitted for each concrete mix to be used on the project. Each mix design shall list the proportions by weight of cement, weight or volume of water, weights of aggregates in a saturated surface-dry condition, and type, quantity, and name of admixtures per cubic yard of concrete. All materials included in the mixture shall be of the same type and from the same source as will be used on the project. Each mix shall be accompanied by evidence by one of the following methods that demonstrates the mix will produce concrete having the characteristics and quality as specified:

- a. Project Data. Submit evidence obtained within the last 5 years from previous quality control testing on the concrete mix.
- b. Mix Design Study. Submit a mix design study complying with ACI 211.1 conducted in the past 12 months. The mix design shall be completed by a testing laboratory complying with ASTM C 1077.

Project data or mix design studies shall be obtained for the exact mix as submitted. Minor mix alterations or substitutions may be accepted if approved by the Contracting Officer. Any alternations or substitutions shall be clearly indentified, and shall be accompanied by recommendations from the admixture supplier or a registered professional engineer indicating the expected effects on the concrete.

SD-07 Certificates

Manufacturer's Certificates;

The following materials shall be certified for compliance with all specification requirements:

- a. Cement and pozzolan
- b. Impervious sheet curing materials
- c. Admixtures
- d. Curing compound

Qualifications;

Written documentation for Contractor Quality Control personnel.

Batch Tickets

Batch tickets shall be collected and furnished to the Contracting Officer for each load of ready-mixed concrete. The batch tickets do not need to be transmitted through the submittal process.

1.3 QUALIFICATIONS

Contractor Quality Control personnel assigned to concrete construction shall be American Concrete Institute (ACI) Certified Workmen in grade I or higher or shall have written evidence of having completed similar qualification programs.

1.4 CONSTRUCTION TOLERANCES

Variation in alignment, grade, and dimensions of the structures from the established alignment, grade, and dimensions shown shall be within the tolerances specified in SECTION 03100 STRUCTURAL CONCRETE FORMWORK.

1.5.1 Appearance

Finished surfaces shall be protected from stains or abrasions. Permanently exposed surfaces shall be cleaned, if stained or otherwise discolored, by an approved method that does not harm the concrete. Abrupt variations in color, shade, or tint will not be permitted on these surfaces.

1.5 STORAGE OF MATERIALS

Cement and other cementitious materials shall be stored in weathertight buildings, bins, or silos which will exclude moisture and contaminants and keep each material completely separated. Aggregate stockpiles shall be arranged and used in a manner to avoid excessive segregation and to prevent contamination with other materials or with other sizes of aggregates. Aggregate shall not be stored directly on ground unless a sacrificial layer is left undisturbed. Do not use frozen or partially frozen aggregates. Allow sand to drain until moisture content is uniform prior to use. Reinforcing bars and accessories shall not be stored on cohesive soils or areas that may puddle water. Other materials shall be stored in such a manner as to avoid contamination and deterioration. Admixtures which have been in storage at the project site for longer than 6 months or which have been subjected to freezing shall not be used unless retested and proven to meet the specified requirements. Materials shall be capable of being accurately identified after bundles or containers are opened.

1.6 GOVERNMENT ASSURANCE INSPECTION AND TESTING

The Contracting Officer may appoint a Government representative or an independent testing laboratory to inspect construction and monitor operations of the Contractor's CQC staff as considered appropriate for quality assurance. The Contractor shall provide facilities and labor as may be necessary for procurement of representative test samples.

Government inspection or testing will not relieve the Contractor of any of its CQC responsibilities. Failure to detect defective work or material will not prevent rejection later when a defect is discovered nor will it obligate the Government for final acceptance.

PART 2 PRODUCTS

2.1 GENERAL CONCRETE REQUIREMENTS

Concrete shall be ready mixed concrete conforming to ASTM C94. All concrete to be normal weight concrete. Water-cement ratio shall not exceed 0.44. The maximum water-cement ratio will be determined by the weight equivalency method as described in ACI 211.1 (cement plus pozzolan, silica fume, and ground granulated blast furnace slag). Materials shall meet the requirements of the respective publications and other data specified below.

2.1.1 Strength Requirements

The design compressive strength (f'_c) shall not be less than 4,000 pounds per square inch. The strength of the concrete will be considered satisfactory so long as the average of all sets of three consecutive test results equals or exceeds the specified compressive strength f'_c and no individual test result falls below the specified strength f'_c by more than 500 psi. A "test" is defined as the average of two companion cylinders, or if only one cylinder is tested, the results of the single cylinder test. Design compressive strength (f'_c) shall be evaluated for acceptance at 28 days unless pozzolan is used, in which case the design strength shall be met in 90 calendar days, provided the 90-day period does not extend past the contract expiration date. Members identified with concrete not meeting the criteria shall be replaced. The Contractor may conduct additional testing to verify strength or further define the limits of inferior concrete if approved by the Contracting Officer.

2.1.2 Slump

Slump of the concrete, as delivered to the point of placement into the forms, shall not exceed 3 inches and shall not be less than 1 inch. Slump is measured at point of discharge of the concrete into the concrete construction member. If a superplastizer is used, the slump shall not exceed 3 inches before the admixture is added and shall not exceed 8 inches at the point of delivery after the admixture is added. Concrete of lower than minimum slump may be used provided it can be properly placed and consolidated. Pumped concrete: Provide additional water at batch plant to allow for slump loss due to pumping. Provide only enough additional water so that slump of concrete at discharge end of pump hose does not exceed maximum slump specified above. Determine slump per ASTM C143.

2.1.3 Admixtures

Concrete shall not contain admixtures that provide special properties to the concrete unless specified or approved. Admixtures used on the project shall be included in the mix design submittals. Accelerating admixtures shall be used only during cold weather and when approved in writing.

2.1.3.1 Air Entrainment

All concrete shall be air entrained to contain between 5 and 7 percent total air. Air content to be measured in accordance with ASTM C231, ASTM C173, or ASTM C138.

2.1.4 Size of Coarse Aggregate

Nominal maximum size coarse aggregate shall be 1-1/2 inches, except 3/4 inch nominal maximum size coarse aggregate shall be used when any of the following conditions exist: the narrowest dimension between sides of forms is less than 7-1/2 inches, the depth of the slab is less than 4-1/2 inches, or the minimum cover or clear spacing between reinforcing is less than 2 inches.

2.2 CEMENTITIOUS MATERIALS

Cementitious materials shall be portland cement, or portland cement in combination with pozzolan or ground granulated blast furnace slag. Minimum cement content shall be 611 pounds per cubic yard. Optional pozzolan replacement of cement shall be limited to 15 percent of the total cementitious material of a mix by weight. Cementitious materials shall conform to appropriate specifications listed below. Use of cementitious materials in concrete which will have surfaces exposed in the completed structure shall be restricted so there is no change in color, source, or type of cementitious material.

2.2.1 Portland Cement

ASTM C 150, Type I with a maximum 15 percent amount of tricalcium aluminate, or Type II. White portland cement shall meet the above requirements except that it may be Type I, Type II or Type III. White Type III shall be used only in specific areas of the structure, when approved in writing.

2.2.2 Pozzolan (Fly Ash)

ASTM C 618, Class C or F with the optional requirements for multiple factor, drying shrinkage, and uniformity from Table 2A of ASTM C 618. Requirement for maximum alkalis from Table 1A of ASTM C 618 shall apply.

2.2.3 Ground Granulated Blast-Furnace (GGBF) Slag

ASTM C 989, Grade 120.

2.3 AGGREGATES

2.3.1 Composition

Fine aggregate shall consist of natural sand, manufactured sand, or a combination of natural and manufactured sands. Coarse aggregate shall consist of gravel, crushed gravel, crushed stone, or a combination thereof. Maximum amount of clay or shale particles: 1 percent.

2.3.2 Quality

The aggregate particles shall be clean, hard, unweathered, and uncoated. The shape of the particles shall be generally cubical or spherical. Where required, fines shall be removed from the aggregates by adequate washing. The aggregates as delivered to the mixer shall meet the quality requirements of ASTM C-33, Table 3 for the appropriate type or location of concrete construction for use in a severe climate.

2.3.3 Sources

Unless approved otherwise, aggregates shall be produced from the sources listed in SECTION 00830 ATTACHMENTS. If the Contractor proposes to furnish aggregates from a source not listed, the Government will make such tests and other investigations as necessary to determine whether or not aggregates meeting the requirements of this project can be produced from the proposed source. The tests to which the aggregate will be subjected may include specific gravity, absorption, Los Angeles abrasion, soundness in magnesium sulfate, petrographic analysis, freezing and thawing in concrete, alkali-aggregate reaction, organic impurities, deleterious materials, and other tests necessary to determine that concrete of acceptable quality and cost can be produced from the materials proposed. These tests will be conducted in accordance with the applicable Corps of Engineers methods of testing given in the Handbook for Concrete and Cement.

When the Contractor desires to use aggregates from a source not listed, suitable samples for quality evaluation consisting of not less than 700 pounds of each size of coarse aggregate and 300 pounds of fine aggregates shall be taken in accordance with ASTM D 75 and delivered to the Contracting Officer or to a laboratory as directed. A maximum of 120 calendar days will be required to complete evaluation of the aggregate.

2.4 CHEMICAL ADMIXTURES

Chemical admixtures, when required or permitted, shall conform to the appropriate specification listed.

- a. Air-Entraining Admixture. ASTM C 260 and shall consistently entrain the air content in the specified ranges under field conditions.
- b. Accelerating Admixture. ASTM C 494, Type C or E, except that calcium chloride or admixtures containing calcium chloride shall not be used.
- c. Water-Reducing or Retarding Admixture. ASTM C 494, Type A, B, or D.
- d. High-Range Water Reducer. ASTM C 494, Type F or G.

Do not use retarding or accelerating admixtures unless specifically approved in writing by the Contracting Officer and at no cost to the Government.

2.5 CURING MATERIALS

2.5.1 Impervious-Sheet

Impervious-sheet materials shall conform to ASTM C 171, type optional, except that polyethylene sheet shall be white opaque.

2.5.2 Membrane-Forming Compound

Membrane-Forming curing compound shall conform to ASTM C 309, Type 1-D or 2, except that only a styrene acrylate or chlorinated rubber compound meeting Class B requirements shall be used for surfaces that are to be painted or are to receive bituminous roofing, or waterproofing, or floors that are to receive adhesive applications of resilient flooring. The curing compound selected shall be compatible with any subsequent paint, roofing, waterproofing, or flooring specified. Nonpigmented compound shall contain a fugitive dye, and shall have the reflective requirements in ASTM C 309 waived. Membrane-forming curing compound shall not be used on surfaces that are to be treated with floor hardener.

2.5.3 Burlap and Cotton Mat

Burlap and cotton mat used for curing shall conform to AASHTO M 182.

2.6 WATER

Water for mixing and curing shall be fresh, clean, potable, and free of injurious amounts of oil, acid, salt, or alkali, except that non-potable water may be used if it meets the requirements of COE CRD-C 400. Water for curing shall not contain any substance that stains the concrete. River water shall not be used.

2.7 GROUT

2.7.1 Nonshrink Grout

Nonmetallic, noncorrosive, nonstaining, premixed with only water to be added. Grout to produce a positive but controlled expansion. Mass expansion not to be created by gas liberation. Minimum compressive strength of nonshrink grout at 28 days: 6500 psi.

2.7.2 Epoxy Grout

3-component epoxy resin system: Two liquid epoxy components and one inert aggregate filler component. Each component packaged separately for mixing at jobsite.

2.8 BONDING AGENT

ASTM C1059, Type II

2.9 BONDING GROUT

One part cement to one part aggregate. Mix cement and aggregate. Mix bonding agent and water together in separate container in accordance with manufacturer's instruction. Add bonding agent/water mixture to cement/aggregate mixture. Mix to consistency of thick cream. Bonding

agent itself may be used as bonding grout if approved by manufacturer and Contracting Officer.

2.10 PATCHING MORTAR

One part cement to two and one-half parts aggregate by damp loose volume. Substitute white Portland cement for a part of gray Portland cement to produce color matching surrounding concrete. Mix cement and aggregate. Mix bonding agent and water together in separate container in accordance with manufacturer's instructions. Add only enough bonding agent/water mixture to cement/aggregate mixture to allow handling and placing. Let stand with frequent manipulation with a trowel, until mix has reached stiffest consistency to allow placement.

2.11 EPOXY ADHESIVE

ASTM C881, Type V

PART 3 EXECUTION

3.1 CONCRETE FINISH SCHEDULE

- a. Broomed Finish. A broomed finish shall be applied to the following surfaces: walks, exterior stairs, surfaces to receive terrazzo, treads of concrete pan stairs, and exterior slab closure. Exterior surfaces shall be sloped for drainage, unless otherwise shown.
- b. Float Finish. Surfaces to be float-finished shall include the top of the structural slab where insulation is to be applied and all remaining surfaces not specified elsewhere. The finished surface shall be a true plane within 5/16 inch in 10 feet.
- c. Trowel Finish. A steel trowel finish shall be applied to all floor surfaces, unless otherwise specified or indicated.
- d. Forms. Surfaces, unless another type of finish is specified, shall be left with the texture imparted by the forms, except defective surfaces shall be repaired as described above. Forms shall not be reused if there is any evidence of surface wear or defects that would impair the quality of the surface.
- E. Horizontal Concrete Repairs. Concrete shall be screeded, floated, and lightly troweled to a finish approved by the Contracting Officer. The finished surface shall be a true plane within 5/16 inch in 10 feet.

3.2 PREPARATION FOR PLACING

Surfaces to receive concrete shall be clean, damp and free from frost, ice, mud, loose particles, foreign matter, and water. Forms shall be in place, cleaned, coated, and adequately supported. Reinforcing steel shall be in place, cleaned, tied, and adequately supported. Transporting and conveying equipment shall be in-place, ready for use, clean, and free of hardened concrete and foreign material. Equipment for consolidating concrete shall

be at the placing site and in proper working order. Equipment and material for curing and for protecting concrete from weather or mechanical damage shall be at the placing site, in proper working condition and in sufficient amount for the entire placement. Concrete shall not be placed before the completion of all adjacent pile driving or other operations that might prove detrimental to freshly placed concrete.

3.2.1 Soil Subgrades

Immediately prior to setting forms and reinforcement, the foundation shall be compacted with a manual tamper.

3.2.2 Embedded Items

Before placement of concrete, care shall be taken to determine that all embedded items are firmly and securely fastened in place as indicated on the drawings, or required. Conduit and other embedded items shall be clean and free of oil and other foreign matter such as loose coatings or rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed. Voids in sleeves, inserts, and anchor slots shall be filled temporarily with readily removable materials to prevent the entry of concrete into voids.

3.3 CONCRETE PRODUCTION

Concrete shall be furnished from a ready-mixed concrete plant, except that small batches for pours less than 2 cubic yards may be batched on-site. Ready-mixed concrete shall be batched, mixed, and transported in accordance with ASTM C 94. Truck mixers, agitators, and nonagitating transporting units shall comply with NRMCA TMMB 100. Ready-mix plant equipment and facilities shall be certified in accordance with NRMCA QC 3. Aluminum pipes, chutes, troughs, spouts, or tremies shall not be used for pumping, conveying, or placing concrete.

3.3.1 Concrete Mixers

The mixers shall not be charged in excess of the capacity recommended by the manufacturer. Truck mixers, the mixing of concrete therein, and concrete uniformity shall conform to the requirements of ASTM C 94. Each truck shall be equipped with two counters from which it is possible to determine the number of revolutions at mixing speed and the number of revolutions at agitating speed.

3.3.2 Site Mixed Concrete

If the Contractor elects to provide an onsite batching and mixing plant, a batch type plant shall be provided of sufficient capacity to prevent cold joints. Site-mixed concrete shall be produced in conformance with ACI 301, or by volumetric batching and continuous mixing in conformance with ASTM C 685.

3.4 TRANSPORTING CONCRETE TO PROJECT SITE

Concrete shall be transported to the placing site in truck mixers

conforming to NRMCA TMMB 100.

3.5 CONVEYING CONCRETE ON SITE

Concrete shall be conveyed from mixer to forms by methods that will prevent segregation or loss of ingredients. Any concrete transferred from one conveying device to another shall be passed through a hopper, which is conical in shape, and shall not be dropped vertically more than 5 feet, except where suitable equipment is provided to prevent segregation and where specifically authorized. Trucks shall be equipped with radios or phones to permit communication between the mixing plant and the concrete placement site.

3.5.1 Concrete Pumps

The pipeline shall be rigid steel pipe or heavy-duty flexible hose. The inside diameter of the pipe shall be at least three times the nominal maximum size coarse aggregate in the concrete mixture to be pumped, but not less than 5 inches. The maximum size coarse aggregate will not be reduced to accommodate the pumps. The distance to be pumped shall not exceed limits recommended by the pump manufacturer. The concrete shall be supplied to the concrete pump continuously. When pumping is completed, concrete remaining in the pipeline shall be ejected without contamination of concrete in place. After each operation, equipment shall be thoroughly cleaned, and flushing water shall be wasted outside of the forms and in compliance with the approved environment protection plan.

3.6 PLACING CONCRETE

Place concrete in compliance with ACI 304 and ACI 304.2. Mixed concrete shall be discharged within 1 hour or before the mixer drum has revolved 300 revolutions, whichever comes first after the introduction of the mixing water to the cement and aggregates. When the length of haul makes it impossible to deliver truck-mixed concrete within this time limit, batching of cement and a portion of the mixing water shall be delayed until the truck mixer is at or near the construction site. Concrete shall be placed within 15 minutes after it has been discharged from the transporting unit. Sufficient placing capacity shall be provided so that concrete can be kept free of cold joints.

3.6.1 Depositing Concrete

Concrete shall be deposited as close as possible to its final position in the forms, and there shall be no vertical drop greater than 5 feet except where suitable equipment is provided to prevent segregation and where specifically authorized. Depositing of the concrete shall be so regulated that it will be effectively consolidated in horizontal layers not more than 18 inches thick, except that all slabs shall be placed in a single layer. Concrete to receive other construction shall be screeded to the proper level. Concrete shall be deposited continuously so that fresh concrete is deposited on in-place concrete that is still plastic.

3.6.2 Consolidation

Consolidation of concrete shall conform to ACI 309, except as otherwise specified. Immediately after placing, each layer of concrete shall be consolidated by internal vibrators, except for slabs 4 inches thick or less. The vibrators shall at all times be adequate in effectiveness and number to properly consolidate the concrete. A spare vibrator shall be kept at the jobsite during all concrete placing operations. Vibrators shall be inserted vertically at uniform spacing over the area of placement.

The distance between insertions shall be approximately 1-1/2 times the radius of action of the vibrator so that the area being vibrated will overlap the adjacent just-vibrated area by a reasonable amount. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the preceding layer if there is such. Vibrator shall be held stationary until the concrete is consolidated and then vertically withdrawn slowly while operating. Form vibrators shall not be used unless specifically approved and unless forms are constructed to withstand their use. Vibrators shall not be used to move concrete within the forms. Excessive vibration of concrete resulting in segregation shall be prevented.

3.6.3 Cold Weather Requirements

Concrete shall not be placed without a procedure approved in accordance with paragraph: SUBMITTALS, when the concrete is likely to be subjected to freezing temperatures before the expiration of the curing period. Heating of the mixing water or aggregates will be required to regulate the concrete-placing temperatures. The placing temperature of the concrete shall be as recommended in ACI 306R, Table 3.1, with the temperature of the concrete measured in accordance with ASTM C 1064. Air and form temperature in contact with concrete shall be above 50 degrees F prior to placing concrete and maintained for the first 3 days, and at a temperature above 32 degrees F for the remainder of the specified curing period. Thermometers shall be installed at such locations as may be directed. Suitable thermometers shall be furnished by the Contractor and installed adjacent to the concrete surface and 2 inches inside the surface of the concrete. During the period of protection removal, heat shall be shut down and insulation or tents shall be removed in a systematic schedule such that the temperature differential between the air and concrete surface does not exceed 25 degrees F. Exhaust fumes from combustion heating units shall be vented to the outside of the enclosure, and heaters and ducts shall be placed and directed so as not to cause areas of overheating and drying of concrete surfaces or to create fire hazards. Materials entering the mixer shall be free from ice, snow, or frozen lumps.

3.6.4 Hot Weather Requirements

Concrete shall be properly placed and finished with approved procedures in accordance with paragraph: SUBMITTALS. When hot, windy conditions during concreting appear probable, equipment and material shall be at the placing site to provide windbreaks, shading, fogging, or other action to prevent plastic shrinkage cracking or other damaging drying of the concrete. The concrete-placing temperature shall not exceed 85 degrees F (60 degrees F for concrete for horizontal repairs). Cooling of the mixing water or aggregates or placing concrete in the cooler part of the day may be required to obtain an adequate placing temperature. Steel forms and reinforcements shall be cooled prior to concrete placement when steel

temperatures are greater than 120 degrees F. Conveying and placing equipment shall be cooled if necessary to maintain proper concrete-placing temperature. When the rate of evaporation of surface moisture, as determined by use of Figure 2.1.5 of ACI 305, may reasonably be expected to exceed 0.2 pounds per square feet per hour, provision for windbreaks, shading, fog spraying, or wet covering with a light-colored material shall be made in advance of placement, and such protective measures shall be taken as quickly as finishing operations will allow.

3.7 JOINTS

All joints not shown on the drawings are subject to approval by the Contracting Officer. Joints shall be perpendicular to the main reinforcement.

3.7.1 Construction Joints

Concrete shall be placed continuously so that structural members are monolithic in construction. Construction joints shall be located and constructed as indicated or approved. Where concrete work is interrupted by weather, end of work shift or other similar type of delay, location and type of construction joint shall be subject to approval of the Contracting Officer. Fresh concrete shall not be placed against adjacent hardened concrete until it is at least 48 hours old.

3.7.1.1 Preparation for Construction Joints

Concrete surfaces to which other concrete is to be bonded shall be abraded in an approved manner that will expose sound aggregate uniformly without damaging the concrete. Surfaces shall be thoroughly washed and shall be damp but without free water when concrete is placed. The concrete surface shall be free of all accumulated laitance, coatings, stains, debris, loose material, and other foreign matter. Laitance shall be removed when the concrete is sufficiently hard so that only the surface skin or mortar is removed and there is no undercutting of coarse aggregate particles. The surface shall be cleaned as the last operation prior to closing forms and obstructing the area with reinforcement.

3.7.2 Preparation for Surface Repairs

Preparation for surface repairs shall follow the requirements for preparation for construction joints, with the following additional criteria: The surface preparation shall include air-water cutting, sandblasting, high-pressure water jet, or other approved method. The surface shall be cleaned as the last operation prior to placing concrete or obstructing the area with reinforcement. The surface shall be watered for 12 hours prior to placing concrete. Horizontal surfaces shall be air blasted to remove puddled water.

3.7.3 Slabs on Grade

Non-sawn joints shall be carefully made with a jointing or edging tool. The perimeters of slabs shall be free of fins, rough edges, spalling, or other unsightly appearance.

3.7.3.1 Construction Joints for slabs on Grade

Except where otherwise indicated, the following treatment shall be constructed: Exterior slabs shall be keyed or doweled. Interior slabs shall be separated with 30 pound asphalt-saturated felt extending for the full depth of the slab. Reinforcing steel shall extend through construction joints.

3.7.3.2 Contraction Joints for slabs

Contraction joints shall be 1/4 the depth of the slab thickness and between 1/8 and 3/16 inch wide. For saw-cut joints, cutting shall be timed properly with the set of the concrete. Cutting shall be started as soon as the concrete has hardened sufficiently to prevent ravelling of the edges of the saw cut. Cutting shall be completed before shrinkage stresses become sufficient to produce cracking.

3.7.4 Waste Disposal

The method used in disposing of wastewater employed in cutting, washing, and rinsing of concrete surfaces shall be such that the wastewater does not stain, discolor, or affect exposed surfaces of the structures, or damage the environment of the project area.

3.8 FINISHING FORMED SURFACES

Beginning no more than 24 hours after form removal, all fins and loose materials shall be removed. All voids and honeycombs exceeding 1/2 inch in diameter and all tie rod holes shall be reamed or chipped and filled with dry pack mortar. Voids and honeycomb shall be dampened, brush-coated with a neat cement grout or with an approved bonding agent, and filled with mortar. The cement used in mortar for all surfaces permanently exposed to view shall be a blend of portland cement and white cement, so that the final color when cured shall be the same as adjacent concrete. The mortar shall consist of one part cement to two and one-half parts fine aggregate. The quantity of mixing water shall be the minimum necessary to obtain a uniform mixture and to permit placing. Mortar shall be thoroughly compacted in place and struck off to adjacent concrete. Temperature of the concrete, ambient air, replacement concrete, or mortar during remedial work, including curing, shall be above 50 F. The patched areas shall be cured for seven days. Defective areas larger than 36 square inches in any surface shall be replaced or corrected as directed by the Contracting Officer.

3.9 FINISHING UNFORMED SURFACES

The finish of all unformed surfaces shall meet the requirements of paragraph Tolerances in PART 1, when tested as specified herein.

3.9.1 General

Unformed surfaces that are not to be covered by additional concrete or backfill shall have a float finish, with additional finishing as specified

below, and shall be true to the elevation shown on the drawings. Unless otherwise shown on the drawings, exterior surfaces shall be sloped for drainage, as directed. Joints shall be carefully made with a jointing or edging tool. The dusting of surfaces with dry cement or other materials or the addition of any water during finishing shall not be permitted. If bleedwater is present prior to finishing, the excess water shall be carefully dragged off or removed by absorption with porous materials such as burlap. Slabs with surfaces which exhibit significant crazing shall be removed and replaced.

3.9.2 Rough Slab Finish

As a first finishing operation for unformed surfaces and as final finish for slabs to receive mortar setting beds, the surface shall receive a rough slab finish. The concrete shall be screeded with straightedge strikeoffs immediately after consolidation to bring the surface to the required finish level with no coarse aggregate visible. Side forms and screed rails shall be provided, rigidly supported, and set to exact line and grade.

3.9.3 Floated Finish

Screeding shall be followed immediately by darbying or bull floating before bleeding water is present, to bring the surface to a true, even plane. After the concrete has stiffened it shall be floated to a true and even plane free of ridges. Floating shall be performed by use of suitable hand floats or power driven equipment.

3.9.4 Troweled Finish

The finished surface shall be thoroughly consolidated and shall be steel-troweled to a smooth, even, dense finish, free from blemishes including trowel marks and be uniform in texture and appearance. A final hard steel troweling shall be done by hand, with the trowel tipped, and using hard pressure, when the surface is at a point that the trowel will produce a ringing sound. Tolerance shall be true planes within 5/16 inch in 10 feet as determined by a 10 foot straightedge placed anywhere on the slab in any direction.

3.9.5 Broomed Finish

After floating, the surface shall be lightly steel troweled, and then carefully scored by pulling a coarse fiber push-type broom across the surface. Brooming shall be transverse to traffic or at right angles to the slope of the slab. After the end of the curing period, the surface shall be vigorously broomed with a coarse fiber broom to remove all loose or semi-detached particles.

3.10 CURING AND PROTECTION

Concrete shall be cured by an approved method for a period of 7 days, except that cement blended with pozzolan shall be cured for 14 days. The curing period may be reduced to 3 days under the written approval of the Contracting Officer for type 3 cement or proper use of accelerator admixtures.

3.10.1 General

Immediately after placement, concrete shall be protected from premature drying, extremes in temperatures, rapid temperature change, mechanical injury and damage from rain and flowing water. Materials and equipment needed for adequate curing and protection shall be available and at the site prior to placing concrete. No fire or excessive heat, including welding, shall be permitted near or in direct contact with the concrete at any time. Follow curing procedures in Hot and Cold Weather Plans as applicable.

3.10.2 Moist Curing

Concrete to be moist-cured shall be maintained continuously wet for the entire curing period, commencing immediately after finishing. When wooden forms are left in place during curing, they shall be kept wet at all times.

Surfaces shall be cured by ponding, by continuous sprinkling, by continuously saturated burlap or cotton mats, or by continuously saturated plastic coated burlap. Burlap and mats shall be clean and free from any contamination and shall be completely saturated before being placed on the concrete. The Contractor shall have an approved work system to ensure that moist curing is continuous 24 hours per day. If inspection identifies an area of inadequate curing, immediate corrective action shall be taken, and the required curing period for those areas shall be extended by 1 day.

3.10.3 Membrane Forming Curing Compounds

Membrane curing will not be permitted on any surface to which sack-rubbed finish or smooth finish is to be applied. Membrane curing shall not be used on surfaces containing protruding steel reinforcement, or surfaces that are to receive any subsequent treatment depending on adhesion or bonding to the concrete, such as additional concrete, hardeners, sealers, terrazzo, or abrasive aggregate finish. Clear or translucent membrane-forming compound with fugitive dye shall be used on all surfaces permanently exposed to view, and white pigmented compound may be used on all other surfaces. A styrene acrylate or chlorinated rubber compound meeting ASTM C 309, Class B requirements, may be used for surfaces which are to be painted or are to receive bituminous roofing or waterproofing, or floors that are to receive adhesive applications of resilient flooring. The curing compound selected shall be compatible with any subsequent paint, roofing, waterproofing or flooring. Membrane curing compound shall not be used on surfaces that are maintained at curing temperatures with free steam.

Curing compound shall be applied to formed surfaces immediately after the forms are removed and prior to any patching or other surface treatment except the cleaning of loose sand, mortar, and debris from the surface. All surfaces shall be thoroughly moistened with water. Curing compound shall be applied to slab surfaces as soon as the bleeding water has disappeared, with the tops of joints being temporarily sealed to prevent entry of the compound and to prevent moisture loss during the curing period. The curing compound shall be applied in a two-coat continuous operation by approved motorized power-spraying equipment operating at a minimum pressure of 75 psi, at a uniform coverage of not more than 400

square feet per gallon for each coat, and the second coat shall be applied perpendicular to the first coat. Concrete surfaces which have been subjected to rainfall within 3 hours after curing compound has been applied shall be resprayed by the method and at the coverage specified. Surfaces on which clear compound is used shall be shaded from direct rays of the sun for the first 3 days. Surfaces coated with curing compound shall be kept free of foot and vehicular traffic, and from other sources of abrasion and contamination during the curing period.

Appearance is a primary consideration for exterior concrete surfaces exposed to view. The Contractor shall exercise extreme care to apply curing compound evenly on these surfaces. Variations in shade, color, or tint, resulting from uneven application of curing compound, shall be repaired by and at the expense of the Contractor as directed.

3.10.4 Impervious Sheeting

Surfaces shall be thoroughly wetted and be completely covered with sheeting. Sheeting shall be at least 18 inches wider than the concrete surface to be covered. Covering shall be laid with light-colored side up. Covering shall be lapped not less than 12 inches and securely weighted down or shall be lapped not less than 4 inches and taped to form a continuous cover with completely closed joints. The sheet shall be weighted to prevent displacement so that it remains in contact with the concrete during the specified length of curing. Coverings shall be folded down over exposed edges of slabs and secured by approved means. Sheets shall be immediately repaired or replaced if tears or holes appear during the curing period. If inspection identifies tears, holes, laps or joints that are not completely closed, the tears and holes shall promptly be repaired or the sheets replaced, the joints closed, and the required curing period for those areas shall be extended by 1 day.

3.10.5 Ponding or Immersion

Water shall not be more than 20 degrees F less than the temperature of the concrete.

3.11 GROUT

3.11.1 Grout Schedule of Use

- a. Nonshrink grout: Filling form tie holes, under column and beam base plates, other uses indicated on the Drawings.
- b. Epoxy grout: Patching cavities in concrete, grouting of dowels and anchor bolts into existing concrete, other used indicated on the Drawings.

3.11.2 Grout Installation

- a. Nonshrink grout: Clean concrete surface to receive grout. Saturate concrete with water for 24 hours prior to grouting. Mix in a mechanical mixer. Use no more water than necessary to produce flowable grout. Place in accordance with manufacturer's instructions. Provide

under beam, column, and equipment base plates, and in other locations indicated on the Drawings. Completely fill all spaces and cavities below the top of base plates. Provide forms where base plates and bed plates do not confine grout. Where exposed to view, finish grout edges smooth. Except where a slope is indicated on the Drawings, finish edges flush at the base plate, bed plate, member or piece of equipment.

Coat exposed edges of grout with cure or seal compound recommended by the grout manufacturer.

b. Epoxy grout: Mix and place in accordance with manufacturer's instructions. Apply only to clean, dry, sound surface. Completely fill all cavities and spaces around dowels and anchors without voids. Grout base and bed plates as specified for nonshrink grout. Obtain manufacturer's field technical assistance as required to assure proper placement.

3.12 TESTING AND INSPECTION FOR CONTRACTOR QUALITY CONTROL

The Contractor shall perform the inspection and tests described below and, based upon the results of these inspections and tests, shall take the action required and shall submit specified reports. When, in the opinion of the Contracting Officer, the concreting operation is out of control, concrete placement shall cease and the operation shall be corrected. The laboratory performing the tests shall conform with ASTM C 1077. If the Government conducts quality assurance testing, the Contractor shall assist in collection of samples as directed. All necessary platforms, tools, and equipment for obtaining samples shall be furnished by the Contractor.

3.12.1 Grading and Corrective Action

3.12.1.1 Fine Aggregate

At least once during each shift when the concrete plant is operating, there shall be one sieve analysis in accordance with ASTM C 136.

3.12.1.2 Coarse Aggregate

At least once during each shift in which the concrete plant is operating, there shall be a sieve analysis in accordance with ASTM C 136 for each size of coarse aggregate.

3.12.2 Concrete Mixture

a. Air Content Testing. Air content tests shall be measured when compressive strength specimens are fabricated. Specified air content shall be attained at point of placement into the forms. Measurement shall be in accordance with ASTM C 231.

c. Slump Testing. The concrete slump shall be measured when compressive strength specimens are fabricated. Measurement shall be in accordance with ASTM C 143. The slump shall be reported along with the compressive strength data.

e. Temperature. The temperature of the concrete shall be measured

when compressive strength specimens are fabricated. Measurement shall be in accordance with ASTM C 1064. The temperature shall be reported along with the compressive strength data.

f. Strength Specimens. Test cylinders shall be cast for compressive strength tests for each mix design at the following rates:

- a. not less than once each day when pour exceeds 8 cubic yards.
- b. not less than once for each 125 cubic yards of concrete.
- c. the number of test cylinders need not exceed 3 sets per day for each mix.

A set of test specimens shall consist of four cylinders, one to be tested at 7 days and two at 28 days. If either of the 28 day breaks does not meet the specified strength, the fourth cylinder shall be tested at 90 days, otherwise it shall be discarded. Test specimens shall be molded and cured in accordance with ASTM C 31 and tested in accordance with ASTM C 39. Results of all strength tests shall be reported immediately to the Contracting Officer.

3.12.3 Inspection Before Placing

Foundations, construction joints, forms, and embedded items shall be inspected by the Contractor in sufficient time prior to each concrete placement in order to certify to the Contracting Officer that they are ready to receive concrete. Full cooperation shall be given other trades to install embedded items. Suitable templates or instructions shall be used for setting items not placed in the forms.

3.12.4 Cold-Weather Protection

At least once each shift and once per day on non-work days, an inspection shall be made of all areas subject to cold-weather protection. Any deficiencies shall be noted, corrected, and reported.

3.12.5 Reports

The results of all tests and inspections conducted at the project site, as well as corrective actions taken, shall be reported in writing weekly and shall be delivered to the quality assurance representative within three days after the end of each weekly reporting period. The Contracting Officer has the right to examine all Contractor quality control records.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 05 - METALS

SECTION 05055

METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DETAIL DRAWINGS
- 1.4 QUALIFICATION OF WELDERS AND WELDING OPERATORS

PART 2 PRODUCTS

2.1 MATERIALS

- 2.1.1 Materials Orders
- 2.1.2 Materials List
- 2.1.3 Shipping Bill
- 2.1.4 Miscellaneous Metals and Standard Articles
 - 2.1.4.1 Structural Steel
 - 2.1.4.2 Bolts, Nuts, and Washers
 - 2.1.4.3 Welding Electrodes
 - 2.1.4.4 Aluminum
 - 2.1.4.5 Embedded Anchor Bolts, Expansion Anchor Bolts, Adhesive Anchor Bolts
 - 2.1.4.6 Galvanizing Repair Paint
- 2.1.5 Manufactured Units
 - 2.1.5.1 Steel Grating

2.2 FABRICATION

- 2.2.1 Structural Fabrication
 - 2.2.1.1 Dimensional Tolerances for Structural Work
 - 2.2.1.2 Structural Steel Fabrication
 - 2.2.1.3 Galvanized Steel Railing Fabrication
- 2.2.2 Welding
 - 2.2.2.1 Welding of Structural Steel
 - 2.2.2.2 Welding of Steel Castings
- 2.2.3 Bolted Connections
 - 2.2.3.1 Bolted Structural Steel Connections
 - 2.2.3.2 Bolted Aluminum Connections
- 2.2.4 Castings
- 2.2.5 Miscellaneous Provisions
 - 2.2.5.1 Metallic Coatings
 - 2.2.5.2 Cleaning of Corrosion-Resisting Steel
 - 2.2.5.3 Lubrication
- 2.2.6 Shop Assembly

2.3 TESTS, INSPECTIONS, AND VERIFICATIONS

- 2.3.1 Nondestructive Testing
- 2.3.2 Tests of Machinery and Structural Units
- 2.3.3 Inspection of Structural Steel Welding
 - 2.3.3.1 Visual Examination
 - 2.3.3.2 Nondestructive Examination
 - 2.3.3.3 Test Coupons
 - 2.3.3.4 Supplemental Examination
- 2.3.4 Structural Steel Welding Repairs

PART 3 EXECUTION

- 3.1 INSTALLATION
 - 3.1.1 Alignment and Setting
 - 3.1.2 Blocking and Wedges
 - 3.1.3 Anchor Bolts
 - 3.1.4 Bolted Connections
 - 3.1.5 Steel Grating
 - 3.1.6 Galvanized Steel Railings
- 3.2 PROTECTION OF FINISHED WORK
 - 3.2.1 Machined Surfaces
 - 3.2.2 Galvanized Surfaces
 - 3.2.3 Aluminum
- 3.3 TESTS
 - 3.3.1 Workmanship
 - 3.3.2 Production Welding

-- End of Section Table of Contents --

SECTION 05055

METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ALUMINUM ASSOCIATION (AA)

AA SAS-30	(1986) Aluminum Structures Construction Manual Series - Section 1 Specifications for Aluminum Structures
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AMERICAN GEAR MANUFACTURERS ASSOCIATION (AGMA)

AGMA 2005-B	(1988) Design Manual for Bevel Gears
AGMA 6001-C	(1988) Design and Selection of Components for Enclosed Gear Drives

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 123	(1989a) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 325	(1994) Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A 325M	(1993) High-Strength Bolts for Structural Steel Joints (Metric)
ASTM A 380	(1994a) Cleaning and Descaling Stainless Steel Parts, Equipment, and Systems
ASTM A 490	(1993) Heat-Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength
ASTM A 490M	(1993) High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric)
ASTM A 514/A 514M	(1994a) High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding

ASTM B 177	(1993) Chromium Electroplating on Steel for Engineering Use
ASTM B 766	(1986; R 1993) Electrodeposited Coatings of Cadmium
ASTM A 780	(1993a) Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM D 962	(1981; R 1994) Aluminum Powder and Paste Pigments for Paints
ASTM E 94	(1993) Radiographic Testing
ASTM E 165	(1995) Liquid Penetrant Examination Inspection Method
ASTM E 446	(1993) Radiographs for Steel Casting up to 2 in. (51 mm) in Thickness
ASTM E 709	(1995) Magnetic Particle Examination

ASME INTERNATIONAL (ASME)

ASME B4.1	(1967; R 1994) Preferred Limits and Fits for Cylindrical Parts
ASME B46.1	(1985) Surface Texture (Surface Roughness, Waviness, and Lay)
ASME BPV IX	(1995) Boiler and Pressure Vessel Code; Section IX, Welding and Brazing Qualifications

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1	(1994) Structural Welding Code - Steel
AWS D1.2	(1990) Structural Welding Code - Aluminum

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)

SAE AMS 3110	(1992; Rev G) Primer Zinc Chromate
SAE AMS 3132	(1994; Rev F) Varnish, Phenolic Resin Corrosion-Preventive

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be

submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Detail Drawings; G, AE

Detail drawings for metalwork and machine work shall be submitted and approved prior to fabrication.

SD-03 Product Data

Welding of Structural Steel

Schedules of welding procedures for steel structures shall be submitted and approved prior to commencing fabrication.

Welding of Aluminum

Schedules of welding processes for aluminum fabrications shall be submitted and approved prior to commencing fabrication.

Structural Steel Welding Repairs

Welding repair plans for steel shall be submitted and approved prior to making repairs.

Materials Orders

Copies of purchase orders, mill orders, shop orders and work orders for materials shall be submitted prior to the use of the materials in the work.

Materials List

Materials list for fabricated items shall be submitted at the time of submittal of detail drawings.

Shipping Bill

Shipping bill shall be submitted with the delivery of finished pieces to the site.

SD-06 Test Reports

Tests, Inspections, and Verifications

Certified test reports for materials shall be submitted with all materials delivered to the site.

SD-07 Certificates

Qualification of Welders and Welding Operators

Certifications for welders and welding operators shall be

submitted prior to commencing fabrication.

Application Qualification for Steel Studs

Certified reports for the application qualification for steel studs shall be submitted and approved prior to commencing fabrication.

1.3 DETAIL DRAWINGS

Detail drawings for metalwork and machine work shall include catalog cuts, templates, fabrication and assembly details and type, grade and class of material as appropriate. Elements of fabricated items inadvertently omitted on contract drawings shall be detailed by the fabricator and indicated on the detail drawings.

1.4 QUALIFICATION OF WELDERS AND WELDING OPERATORS

The Contractor shall certify that the qualification of welders and welding operators and tack welders who will perform structural steel welding have been qualified for the particular type of work to be done in accordance with the requirements of AWS D1.1, Section 5, or ASME BPV IX, Section IX, prior to commencing fabrication. The certificate shall list the qualified welders by name and shall specify the code and procedures under which qualified and the date of qualification. Prior qualification will be accepted if welders have performed satisfactory work under the code for which qualified within the preceding three months. The Contractor shall require welders to repeat the qualifying tests when their work indicates a reasonable doubt as to proficiency. Those passing the requalification tests will be recertified. Those not passing will be disqualified until passing. All expenses in connection with qualification and requalification shall be borne by the Contractor.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Materials Orders

The Contractor shall furnish 3 copies of purchase orders, mill orders, shop orders and work orders for all materials orders and items used in the work.

Where mill tests are required purchase orders shall contain the test site address and the name of the testing agency.

2.1.2 Materials List

The Contractor shall furnish a materials list of the materials to be used in the fabrication of each item.

2.1.3 Shipping Bill

The Contractor shall furnish a shipping bill or memorandum of each shipment of finished pieces or members to the project site giving the designation mark and weight of each item, the number of items, the total weight, and

the car initial and number if shipped by rail in carload lots. Duplicate copies of shipping bills shall be mailed promptly to the Contracting Officer.

2.1.4 Miscellaneous Metals and Standard Articles

2.1.4.1 Structural Steel

ASTM A36, galvanized.

2.1.4.2 Bolts, Nuts, and Washers

As specified in SECTION 05502.

2.1.4.3 Welding Electrodes

AWS D1.1, E70 Series or as required by AWS Specification.

2.1.4.4 Aluminum

Alloy 6063-T5 or T6, 15,000 psi tensile yield strength minimum.

a. ASTM B221 and B429 for bars, rods, wires, pipes and tubes.

b. Electrodes for welding aluminum: AWS D1.2, filler alloy 4043 or 5356.

2.1.4.5 Embedded Anchor Bolts, Expansion Anchor Bolts, Adhesive Anchor Bolts

As specified in SECTION 05502.

2.1.4.6 Galvanizing Repair Paint

High zinc dust content paint for regalvanizing welds and abrasions. Dried film shall contain not less than 83 percent zinc dust by weight.

2.1.5 Manufactured Units

2.1.5.1 Steel Grating

ANSI MBG 531. Minimum depth: 1-1/4 inches. Minimum rectangular bearing bar thickness: 3/16 inch. Maximum 1-3/16 inch O.C. spacing. Design live load: Not less than 100 psf plus a concentrated load of 300 pounds with a maximum deflection of 1/300 of span under a superimposed live load of 100 psf. Cross bars: Welded, swagged or pressure locked to bearing beam, maximum spacing 4 inches O.C. Top edges of bars: Serrated or grooved. Individual grating sections: not wider than 3 feet and not more than 100 pounds. Finish: Galvanized. Clips and bolts: Stainless steel or galvanized. Seat angles: Galvanized steel Ends and perimeter edges: Banded. Openings through grating: Reinforced to provide required load carrying capacity and banded with 4 inch high toe plate.

Minimize the amount of field welding. Shop-assemble components into largest size possible commensurate with transportation and handling

limitations. Shop connections shall be bolted with high-strength bolts or welded. Provide as a minimum, two 3/4 inch diameter ASTM A325 high-strength bolts for all bolted connections. Provide friction-type connections for all bolted connections. One-sided or other types of eccentric connections not indicated will not be permitted without prior approval.

2.2 FABRICATION

2.2.1 Structural Fabrication

Structural steel shapes and plate shall be ASTM A36 galvanized, unless noted otherwise on Drawings. Material must be straight before being laid off or worked. If straightening is necessary it shall be done by methods that will not impair the metal. Sharp kinks or bends shall be cause for rejection of the material. Material with welds will not be accepted except where welding is definitely specified, indicated or otherwise approved. Bends shall be made by approved dies, press brakes or bending rolls. Where heating is required, precautions shall be taken to avoid overheating the metal and it shall be allowed to cool in a manner that will not impair the original properties of the metal. Proposed flamecutting of material other than structural steel shall be subject to approval and shall be indicated on detail drawings. Shearing shall be accurate and all portions of the work shall be neatly finished. Corners shall be square and true unless otherwise shown. Re-entrant cuts shall be filleted to a minimum radius of 3/4 inch unless otherwise approved. Finished members shall be free of twists, bends and open joints. Bolts, nuts and screws shall be tight.

2.2.1.1 Dimensional Tolerances for Structural Work

Dimensions shall be measured by an approved calibrated steel tape of approximately the same temperature as the material being measured. The overall dimensions of an assembled structural unit shall be within the tolerances indicated on the drawings or as specified in the particular section of these specifications for the item of work. Where tolerances are not specified in other sections of these specifications or shown, an allowable variation of 1/32 inch is permissible in the overall length of component members with both ends milled and component members without milled ends shall not deviate from the dimensions shown by not more than 1/16 inch for members 30 feet or less in length and by more than 1/8 inch for members over 30 feet in length.

2.2.1.2 Structural Steel Fabrication

Structural steel may be cut by mechanically guided or hand-guided torches, provided an accurate profile with a surface that is smooth and free from cracks and notches is obtained. Surfaces and edges to be welded shall be prepared in accordance with AWS D1.1, Subsection 3.2. Where structural steel is not to be welded, chipping or grinding will not be required except as necessary to remove slag and sharp edges of mechanically guided or hand-guided cuts not exposed to view. Hand-guided cuts which are to be exposed or visible shall be chipped, ground or machined to sound metal. Minimize the amount of field welding, shop assemble components into largest size possible commensurate with transportation and handling limitations.

Shop connection shall be bolted with high strength bolts or welded. Provide a minimum of two 3/4 inch diameter, ASTM A325 high strength bolts for all bolted connections. Provide friction-type connections for all bolted connections.

One-sided or other types of eccentric connections not indicated will not be permitted without prior approval.

2.2.1.3 Galvanized Steel Railing Fabrication

Verify field conditions and dimensions prior to fabrication. For fabrication of items which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness. Remove blemishes by grinding and buffing or by welding and grinding, prior to cleaning, treating and application of surface finishes.

Form exposed work with smooth, short radius bends, accurate angles and straight edges. Ease exposed edges to a radius of approximately 1/32 inch.

Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work. Drill or punch holes with smooth edges.

Form exposed connections with flush, smooth hairline joints, using stainless steel or aluminum splice locks to splice sections together or by welding. Top rail splices and expansion joints shall be located within 8 inches of post or other support. Ease the edges of top rail splices and expansion joints and remove all burrs left from cutting.

Design railing and anchorage system to withstand: 200 pound concentrated load applied at any point in direction to handrail or guardrail, 50 pounds per linear foot vertical and horizontal uniform load applied simultaneously to the top rail of the guardrail. Concentrated load need not be assumed to act concurrently with uniform load.

Custom fabricate railings to dimensions and profiles indicated. Fabricate all guardrail top rails using minimum 2 inch nominal diameter schedule 40 pipe. Fabricate all guardrail vertical posts using minimum 2 inch nominal diameter schedule 80 pipe. All intermediate horizontal rails of guardrail shall be fabricated using minimum 1-1/2 inch nominal diameter schedule 40 pipe.

Provide a 1-7/8 inch diameter by 8 inch long solid galvanized steel rod welded to the base plate. Fit the vertical post over the solid rod and weld the post to the base plate. Floor flange for vertical guardrail posts mounted to top of concrete surface: 3/8 inch by 6 inch by 6 inch octagonal plate welded to both the 1-7/8 inch diameter by 8 inch long solid rod and the vertical post. Base plate predrilled to accept four anchors. Floor flange for vertical guardrail post mounted to metal structure: 3/8 inch by 2-1/2 inch by 8 inch plate welded to both the 1-7/8 inch diameter solid rod and the vertical post. Base plate predrilled to accept two anchors.

Provide 3/8 inch by 4 inch flat bar toeboards at all elevated walkways,

platforms and stair landings, and where indicated on the Drawings or required by the Building Code or OSHA, whichever requires the more restrictive design.

Fit exposed ends of guardrails and handrails with solid terminations. Where guardrail terminates at a wall, provide a vertical post located 4 inches off the wall to center of post.

Guardrail mounted to the side of concrete walls or the edge of concrete slabs or stairs: Provide a bracket specifically designed for mounting guardrail to side of concrete with sleeve for vertical guardrail post. Predrill bracket for two 3/4 inch anchors. Bracket fabricator to determine number of fasteners required based on load criteria noted in this specification Section.

All handrails shall have galvanized finish.

Welded railing fabrication: All welding to be continuous in accordance with AWS C5.5 and AWS D1.2. All welded railing joints shall have full penetration welds unless noted otherwise. All exposed welds to be round and buffed smooth and flush to match and blend with adjoining surfaces. No ragged edges, surface defects, or undercutting of adjoining surfaces will be accepted. Finishing joints with filler is not acceptable.

Install weeps to drain water from hollow sections of railing at exterior and high humidity conditions. Drill 1/4 inch weep hole in railing 1 inch above walkway surface at bottom of posts set in concrete or otherwise closed at bottom, and at other low points where moisture can collect. Do not drill weep holes in bottom of base plate.

Expansion joints: Allow thermal expansion and contraction of railing while still meeting design loading requirements. Expansion joints shall be provided to correspond with concrete expansion joints.

2.2.2 Welding

2.2.2.1 Welding of Structural Steel

a. Welding Procedures for Structural Steel - Welding procedures for structural steel shall be prequalified as described in AWS D1.1, Subsection 5.1 or shall be qualified by tests as prescribed in AWS D1.1, Section 5. Properly documented evidence of compliance with all requirements of these specifications for previous qualification tests shall establish a welding procedure as prequalified. For welding procedures qualified by tests, the test welding and specimen testing must be witnessed and the test report document signed by the Contracting Officer. Approval of any welding procedure will not relieve the Contractor of the responsibility for producing a finished structure meeting all requirements of these specifications. The Contractor will be directed or authorized to make any changes in previously approved welding procedures that are deemed necessary or desirable by the Contractor Officer. The Contractor shall submit a complete schedule of welding procedures for each steel structure to be welded. The schedule shall conform to the requirements specified in

the provisions AWS D1.1, Sections 2, 3, 4, 7 and 9 and applicable provisions of Section 10. The schedule shall provide detailed procedure specifications and tables or diagrams showing the procedures to be used for each required joint. Welding procedures must include filler metal, preheat, interpass temperature and stress-relief heat treatment requirements. Each welding procedure shall be clearly identified as being prequalified or required to be qualified by tests. Welding procedures must show types and locations of welds designated or in the specifications to receive nondestructive examination.

b. Welding Process - Welding of structural steel shall be by an electric arc welding process using a method which excludes the atmosphere from the molten metal and shall conform to the applicable provisions of AWS D1.1, Sections 1 thru 7, 9, 10 and 11. Welding shall be such as to minimize residual stresses, distortion and shrinkage.

c. Welding Technique

(1) Filler Metal - The electrode, electrode-flux combination and grade of weld metal shall conform to the appropriate AWS specification for the base metal and welding process being used or shall be as shown where a specific choice of AWS specification allowables is required. The AWS designation of the electrodes to be used shall be included in the schedule of welding procedures. Only low hydrogen electrodes shall be used for manual shielded metal-arc welding regardless of the thickness of the steel. A controlled temperature storage oven shall be used at the job site as prescribed by AWS D1.1, Subsection 4.5 to maintain low moisture of low hydrogen electrodes.

(2) Preheat and Interpass Temperature - Preheating shall be performed as required by AWS D1.1, Subsection 4.2 and 4.3 or as otherwise specified except that the temperature of the base metal shall be at least 70 degrees F. The weldments to be preheated shall be slowly and uniformly heated by approved means to the prescribed temperature, held at that temperature until the welding is completed and then permitted to cool slowly in still air. Do not perform welding when ambient temperature is lower than 0 degrees F or where surfaces are wet or exposed to rain, snow, or high wind, or when welders are exposed to inclement conditions.

(3) Stress-Relief Heat Treatment - Where stress relief heat treatment is specified or shown, it shall be in accordance with the requirements of AWS D1.1, Subsection 4.4 unless otherwise authorized or directed.

d. Workmanship - Workmanship for welding shall be in accordance with AWS D1.1, Section 3 and other applicable requirements of these specifications.

(1) Preparation of Base Metal - Prior to welding the Contractor shall inspect surfaces to be welded to assure compliance with AWS D1.1, Subsection 3.2.

(2) Temporary Welds - Temporary welds required for fabrication and erection shall be made under the controlled conditions prescribed for permanent work. Temporary welds shall be made using low-hydrogen welding electrodes and by welders qualified for permanent work as specified in these specifications. Preheating for temporary welds shall be as required by AWS D1.1 for permanent welds except that the minimum temperature shall be 120 degrees F in any case. In making temporary welds arcs shall not be struck in other than weld locations. Each temporary weld shall be removed and ground flush with adjacent surfaces after serving its purpose.

(3) Tack Welds - Tacks welds that are to be incorporated into the permanent work shall be subject to the same quality requirements as the permanent welds and shall be cleaned and thoroughly fused with permanent welds. Preheating shall be performed as specified above for temporary welds. Multiple-pass tack welds shall have cascaded ends. Defective tack welds shall be removed before permanent welding.

2.2.2.2 Welding of Steel Castings

Unsound material shall be removed from the surfaces of steel castings to be incorporated into welded connections by chipping, machining, air-arc gouging or grinding. Major connections designed for transfer of stresses shall not be welded if the temperature of the casting is lower than 100 degrees F. Castings containing over 0.35 percent carbon or over 0.75 percent manganese shall be preheated to a temperature not to exceed 450 degrees F and welding shall be accomplished while the castings are maintained at a temperature above 350 degrees F. Welding will not be permitted on castings containing carbon in excess of 0.45 percent except on written authorization. Castings requiring welding repairs after the first annealing and castings involving welding fabrication shall be stress-relieved annealed prior to receiving final machining unless otherwise permitted.

2.2.3 Bolted Connections

2.2.3.1 Bolted Structural Steel Connections

Bolts, nuts and washers shall be of the type specified or indicated. All nuts shall be equipped with washers except for high strength bolts. Beveled washers shall be used where bearing faces have a slope of more than 1:20 with respect to a plane normal to the bolt axis. Where the use of high strength bolts is specified or indicated the materials, workmanship and installation shall conform to the applicable provisions of ASTM A 325 or ASTM A 490.

a. Bolt Holes - Bolt holes shall be accurately located, smooth, perpendicular to the member and cylindrical.

(1) Holes for regular bolts shall be drilled or subdrilled and reamed in the shop and shall not be more than 1/16 inch larger than the diameter of the bolt.

(2) Holes for fitted bolts shall be match-reamed or drilled in the shop. Burrs resulting from reaming shall be removed. The threads of bolts shall be entirely outside of the holes. The body diameter of bolts shall have tolerances as recommended by ASME B4.1 for the class of fit specified. Fitted bolts shall be fitted in reamed holes by selective assembly to provide an LN-2 fit.

(3) Holes for high strength bolts shall have diameters of not more than 1/16 inch larger than bolt diameters. If the thickness of the material is not greater than the diameter of the bolts the holes may be punched. If the thickness of the material is greater than the diameter of the bolts the holes may be drilled full size or subpunched or subdrilled at least 1/8 inch smaller than the diameter of the bolts and then reamed to full size. Poor matching of holes will be cause for rejection. Drifting occurring during assembly shall not distort the metal or enlarge the holes. Reaming to a larger diameter of the next standard size bolt will be allowed for slight mismatching.

2.2.3.2 Bolted Aluminum Connections

Punching, drilling, reaming and bolting for bolted aluminum connections shall conform to the requirements of AA SAS-30, Section 6.

2.2.4 Castings

Each casting shall bear cast or stamped mark numbers. Castings weighing more than 500 required pounds shall also bear cast or stamped heat numbers.

Deviations from the dimensions of castings shown shall not exceed amounts that will impair the strength of castings by more than 10 percent as computed from the dimensions shown. Dimensions of castings shown on approved detail drawings shall be finished dimensions. Castings that are warped or otherwise distorted or that are oversize to an extent that will interfere with proper fit with other parts of the machinery or structure will be rejected. The structure of metal in castings shall be homogeneous and free from excessive nonmetallic inclusions. Excessive segregation of impurities or alloys at critical points in castings will be cause for rejection. Repairs to castings shall not be made prior to approval. Minor surface imperfections not affecting the strength of casting may be welded in the "green" if approved. Surface imperfections shall be considered minor when the depth of the cavity prepared for welding is the lesser of 20 percent of the actual wall thickness or 1 inch. Defects other than minor surface imperfections may be welded only when specifically authorized in accordance with the following requirements:

- a. The defects have been entirely removed and are judged not to affect the strength, use or machineability of the castings when properly welded and stress relieved.
- b. The proposed welding procedure, stress relief and method of examination of the repair work have been submitted and approved.

2.2.5 Miscellaneous Provisions

2.2.5.1 Metallic Coatings

a. Zinc Coatings - Zinc coatings shall be applied in a manner and of a thickness and quality conforming to ASTM A 123. Where zinc coatings are destroyed by cutting, welding or other causes the affected areas shall be regalvanized. Coatings 2 ounces or heavier shall be regalvanized with a suitable low-melting zinc base alloy similar to the recommendations of the American Hot-Dip Galvanizers Association to the thickness and quality specified for the original zinc coating. Coatings less than 2 ounces shall be repaired in accordance with ASTM A 780.

2.2.5.2 Cleaning of Corrosion-Resisting Steel

Oil, paint and other foreign substances shall be removed from corrosion-resisting steel surfaces after fabrication. Cleaning shall be done by vapor degreasing or by the use of cleaners of the alkaline, emulsion or solvent type. After the surfaces have been cleaned they shall be given a final rinsing with clean water followed by a 24 hour period during which the surfaces are intermittently wet with clean water and then allowed to dry for the purpose of inspecting the clean surfaces. The surfaces shall be visually inspected for evidence of paint, oil, grease, welding slag, heat treatment scale, iron rust or other forms of contamination. If evidence of foreign substance exist the surface shall be cleaned in accordance with the applicable provisions of ASTM A 380. The proposed method of treatment shall be furnished for approval. After treatment the surfaces shall be visually reinspected. Brushes used to remove foreign substances shall have only stainless steel or nonmetallic bristles. Any contamination occurring subsequent to the initial cleaning shall be removed by one or more of the methods indicated above.

2.2.5.3 Lubrication

The arrangement and details for lubrication shall be as shown. Before erection or assembly all bearing surfaces shall be thoroughly cleaned and lubricated with an approved lubricant.

2.2.6 Shop Assembly

Each machinery and structural unit furnished shall be assembled in the shop to determine the correctness of the fabrication and matching of the component parts unless otherwise specified. Tolerances shall not exceed those shown. Each unit assembled shall be closely checked to ensure that all necessary clearances have been provided and that binding does not occur in any moving part. Assembly in the shop shall be in the same position as final installation in the field unless otherwise specified. Assembly and disassembly work shall be performed in the presence of the Contracting Officer unless waived in writing. Errors or defects disclosed shall be immediately remedied by the Contractor without cost to the Government. Before disassembly for shipment each piece of a machinery or structural unit shall be match-marked to facilitate erection in the field. The location of match-marks shall be indicated by circling with a ring of white paint after the shop coat of paint has been applied or as otherwise

directed.

2.3 TESTS, INSPECTIONS, AND VERIFICATIONS

The Contractor shall have required material tests and analyses performed and certified by an approved laboratory to demonstrate that materials are in conformity with the specifications. These tests and analyses shall be performed and certified at the Contractor's expense. Tests, inspections, and verifications shall conform to the requirements of the particular sections of these specifications for the respective items of work unless otherwise specified or authorized. Tests shall be conducted in the presence of the Contracting Officer if so required. The Contractor shall furnish specimens and samples for additional independent tests and analyses upon request by the Contracting Officer. Specimens and samples shall be properly labeled and prepared for shipment.

2.3.1 Nondestructive Testing

When doubt exists as to the soundness of any material part such part may be subjected to any form of nondestructive testing determined by the Contracting Officer. This may include ultrasonic, magnaflux, dye penetrant, x-ray, gamma ray or any other test that will thoroughly investigate the part in question. The cost of such investigation will be borne by the Government. Any defects will be cause for rejection and rejected parts shall be replaced and retested at the Contractor's expense.

2.3.2 Tests of Machinery and Structural Units

The details for tests of machinery and structural units shall conform to the requirements of the particular sections of these specifications covering these items. Each complete machinery and structural unit shall be assembled and tested in the shop in the presence of the Contracting Officer unless otherwise directed. Waiving of tests will not relieve the Contractor of responsibility for any fault in operation, workmanship or material that occurs before the completion of the contract or guarantee. After being installed at the site each complete machinery or structural unit shall be operated through a sufficient number of complete cycles to demonstrate to the satisfaction of the Contracting Officer that it meets the specified operational requirements in all respects.

2.3.3 Inspection of Structural Steel Welding

The Contractor shall maintain an approved inspection system and perform required inspections in accordance with Contract Clause CONTRACTOR INSPECTION SYSTEM. Welding shall be subject to inspection to determine conformance with the requirements of AWS D1.1, the approved welding procedures and provisions stated in other sections of these specifications.

Nondestructive examination of designated welds will be required. Supplemental examination of any joint or coupon cut from any location in any joint may be required.

2.3.3.1 Visual Examination

All visual examination of completed welds shall be cleaned and carefully

examined for insufficient throat or leg sizes, cracks, undercutting, overlap, excessive convexity or reinforcement and other surface defects to ensure compliance with the requirements of AWS D1.1, Section 3 and Section 9, Part D.

2.3.3.2 Nondestructive Examination

The nondestructive examination of shop and field welds shall be performed as designated or described in the sections of these specifications covering the particular items of work.

a. Testing Agency - The nondestructive examination of welds and the evaluation of examination tests as to the acceptability of the welds shall be performed by a testing agency adequately equipped and competent to perform such services or by the Contractor using suitable equipment and qualified personnel. In either case written approval of the examination procedures is required and the examination tests shall be made in the presence of the Contracting Officer. The evaluation of examination tests shall be subject to the approval and all records shall become the property of the Government.

b. Examination Procedures - Examination procedures shall conform to the following requirements.

(1) Ultrasonic Testing - Making, evaluating and reporting ultrasonic testing of welds shall conform to the requirements of AWS D1.1, Section 6, Part C. The ultrasonic equipment shall be capable of making a permanent record of the test indications. A record shall be made of each weld tested.

(2) Radiographic Testing - Making, evaluating and reporting radiographic testing of welds shall conform to the requirements of AWS D1.1, Section 6, Part B.

(3) Magnetic Particle Inspection - Magnetic particle inspection of welds shall conform to the applicable provisions of ASTM E 709.

(4) Dye Penetrant Inspection - Dye penetrant inspection of welds shall conform to the applicable provisions of ASTM E 165.

c. Acceptability of Welds - Welds shall be unacceptable if shown to have defects prohibited by AWS D1.1, Subsection 9.25 or possess any degree of incomplete fusion, inadequate penetration or undercutting.

2.3.3.3 Test Coupons

The Government reserves the right to require the Contractor to remove coupons from completed work when doubt as to soundness cannot be resolved by nondestructive examination. Should tests of any two coupons cut from the work of any welder show strengths less than that specified for the base metal it will be considered evidence of negligence or incompetence and such welder shall be removed from the work. When coupons are removed from any part of a structure the members cut shall be repaired in a neat manner with joints of the proper type to develop the full strength of the members.

Repaired joints shall be peened as approved or directed to relieve residual stress. The expense for removing and testing coupons, repairing cut members and the nondestructive examination of repairs shall be borne by the Government or the Contractor in accordance with the Contract Clauses INSPECTION AND ACCEPTANCE.

2.3.3.4 Supplemental Examination

When the soundness of any weld is suspected of being deficient due to faulty welding or stresses that might occur during shipment or erection, the Government reserves the right to perform nondestructive supplemental examinations before final acceptance. The cost of such inspection will be borne by the Government.

2.3.4 Structural Steel Welding Repairs

Defective welds in the structural steel welding repairs shall be repaired in accordance with AWS D1.1, Subsection 3.7. Defective weld metal shall be removed to sound metal by use of air carbon-arc or oxygen gouging. Oxygen gouging shall not be used on ASTM A 514/A 514M steel. The surfaces shall be thoroughly cleaned before welding. Welds that have been repaired shall be retested by the same methods used in the original inspection. Except for the repair of members cut to remove test coupons and found to have acceptable welds costs of repairs and retesting shall be borne by the Contractor.

PART 3 EXECUTION

3.1 INSTALLATION

All parts to be installed shall be thoroughly cleaned. Packing compounds, rust, dirt, grit and other foreign matter shall be removed. Holes and grooves for lubrication shall be cleaned. Enclosed chambers or passages shall be examined to make sure that they are free from damaging materials. Where units or items are shipped as assemblies they will be inspected prior to installation. Disassembly, cleaning and lubrication will not be required except where necessary to place the assembly in a clean and properly lubricated condition. Pipe wrenches, cold chisels or other tools likely to cause damage to the surfaces of rods, nuts or other parts shall not be used for assembling and tightening parts. Bolts and screws shall be tightened firmly and uniformly but care shall be taken not to overstress the threads. When a half nut is used for locking a full nut the half nut shall be placed first and followed by the full nut. Threads of all bolts except high strength bolts, nuts and screws shall be lubricated with an approved lubricant before assembly. Threads of corrosion-resisting steel bolts and nuts shall be coated with an approved antigalling compound. Driving and drifting bolts or keys will not be permitted.

3.1.1 Alignment and Setting

Each machinery or structural unit shall be accurately aligned by the use of steel shims or other approved methods so that no binding in any moving parts or distortion of any member occurs before it is fastened in place. The alignment of all parts with respect to each other shall be true within

the respective tolerances required. Machines shall be set true to the elevations shown.

3.1.2 Blocking and Wedges

All blocking and wedges used during installation for the support of parts to be grouted in foundations shall be removed before final grouting unless otherwise directed. Blocking and wedges left in the foundations with approval shall be of steel or iron.

3.1.3 Anchor Bolts

See Section 05502 METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS.

3.1.4 Bolted Connections

Install ASTM A325 bolts with hardened washers. Install and tighten in accordance with Section 8 of Specifications for Structural Joints. Coordinate installation with inspection. Do not start installation until coordination with Testing Agency is complete. Slip critical connections: Perform calibration testing for all methods of installation of high-strength bolts in accordance with Section 8(b) of Specification for Structural Joints, using ASTM A325 bolts.

1. Turn-of-nut tightening: Torque wrenches shall be used only by laboratory personnel.
2. Calibrated wrench tightening: Calibrate on a daily basis.
3. Direct tension indicator tightening: If previously approved by Contracting Officer.
4. Installation of alternate design bolts: If previously approved by Contracting Officer.

In the event any bolt in a connection is found to be defective, check and retighten all bolts in the connection.

Do not use gas cutting to correct fabrication errors. In case members do not fit or holes do not match, ream out the holes and insert the next larger size bolt. If the connections require new holes, then drill new holes. Make no such corrections without prior approval of the Contracting Officer. Burning of holes is not permitted.

Tighten and leave in place erection bolts used in welded construction. Provide beveled washers to give full bearing to bolt head or nut where bolts are to be used on surfaces having slopes greater than 1 in 20 with a plane normal to bolt axis.

After bolts are tightened, upset threads of A307 unfinished bolts and anchor bolts to prevent nuts from backing off.

3.1.5 Steel Grating

Attach grating to end and intermediate supports with grating saddle clips and bolts. Maximum spacing: 2 feet on-center with a minimum of two per side. Attach individual units of grating together with clips at 2 feet on-center maximum with a minimum of two clips per side.

3.1.6 Galvanized Steel Railings

Provide welded type railing. Install products in accordance with manufacturer's instructions. Set work accurately in location, alignment and elevation, plumb, level, and true. Measure from established lines and items which are to be built into concrete, masonry or similar construction.

Align railings prior to securing in place to assure proper matching at butting and expansion joints and correct alignment throughout their length.

Provide shims as required.

Install properly sized expansion joints based on temperature at time of installation and differential coefficient of expansion of materials in all railings as recommended by manufacturer. Joints shall be designed to allow expansion and contraction of railing without decreasing design load requirements.

3.2 PROTECTION OF FINISHED WORK

3.2.1 Machined Surfaces

Machined surfaces shall be thoroughly cleaned of foreign matter. All finished surfaces shall be protected by suitable means. Unassembled pins and bolts shall be oiled and wrapped with moisture resistant paper or protected by other approved means. Finished surfaces of ferrous metals to be in bolted contact shall be washed with an approved rust inhibitor and coated with an approved rust resisting compound for temporary protection during fabrication, shipping and storage periods. Finished surfaces of metals which shall be exposed after installation except galvanized steel or nonferrous metals shall be painted as specified in Section 09900 PAINTS AND COATINGS.

3.2.2 Galvanized Surfaces

Repair damaged galvanized surfaces in accordance with ASTM A780. Prepare damaged surfaces by abrasive blasting or power sanding. Apply galvanizing repair paint in accordance with manufacturer's instructions. Minimum thickness shall be the larger of 6 mils dry film thickness or manufacturer's standard.

3.2.3 Aluminum

Aluminum that shall be in contact with grout, concrete or structural steel shall be protected from galvanic or corrosive action as specified in Section 09900 PAINTS AND COATINGS.

3.3 TESTS

3.3.1 Workmanship

Workmanship shall be of the highest grade and in accordance with the best modern practices to conform with the specifications for the item of work being furnished.

3.3.2 Production Welding

Production welding shall conform to the requirements of AWS D1.1 or AWS D1.2 as applicable.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 05 - METALS

SECTION 05502

METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 FABRICATION AND WORKMANSHIP REQUIREMENTS

PART 2 PRODUCTS

- 2.1 MISCELLANEOUS METALS AND STANDARD METAL ARTICLES
 - 2.1.1 Flap Gates
 - 2.1.1.1 Spare Parts for Flap Gate
 - 2.1.2 Bolts, Nuts, and Washers
 - 2.1.2.1 High-Strength Bolts, Nuts, and Washers
 - 2.1.2.2 Bolts, Nuts, and Washers (Other Than High-Strength)
 - 2.1.3 Screws
 - 2.1.4 Expansion Anchor Bolts and Adhesive Anchor Bolts
- 2.2 SHOP FABRICATED METAL ITEMS

PART 3 EXECUTION

- 3.1 BOLTS TO CONCRETE
 - 3.1.1 Expansion Anchor Bolts and Adhesive Anchor Bolts

-- End of Section Table of Contents --

SECTION 05502

METALS: MISCELLANEOUS, STANDARD ARTICLES, SHOP FABRICATED ITEMS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B 98	(1998) Standard Specification for Copper-Silicon Alloy Rod, Bar, and Shapes
ASTM A 126	(2001) Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
ASTM A 307	(1994) Carbon Steel Bolts and Studs, 60 000 psi Tensile Strength
ASTM A 325	(1996) Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM B 584	(2000) Standard Specification for Copper Alloy Sand Castings for General Applications
ASTM F 593	(1998) Stainless Steel Bolts, Hex Cap Screws, and Studs
ASTM F 594	(1998) Stainless Steel Nuts

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Shop Fabricated Metal Items; G, AE

Detail drawings shall be submitted for approval as specified and

in Section 05055 METALWORK FABRICATION, MACHINE WORK,
MISCELLANEOUS PROVISIONS.

SD-03 Product Data

Miscellaneous Metals and Standard Metal Articles

Lists of materials shall be submitted for approval as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

Records which identify the disposition of approved material and fabricated items in the work must be submitted for approval as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

SD-04 Samples

Miscellaneous Metals and Standard Metal Articles; G

Samples shall be submitted for approval as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS. Samples of standard or fabricated items shall be full size and complete as required for installation in the work, and may be installed in the work, provided each sample is clearly identified and its location recorded.

SD-06 Test Reports

Miscellaneous Metals and Standard Metal Articles

Certified test reports for materials tests and analyses shall be submitted for approval as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

Records which identify the disposition of approved material and fabricated items in the work must be submitted for approval as specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

1.3 FABRICATION AND WORKMANSHIP REQUIREMENTS

Fabrication requirements and workmanship provisions for items specified in this section shall conform with the requirements of Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

PART 2 PRODUCTS

2.1 MISCELLANEOUS METALS AND STANDARD METAL ARTICLES

Miscellaneous metal materials and standard metal articles shall conform to the respective specifications and other designated requirements. Sizes shall be as specified or shown. Where material requirements are not specified, materials furnished shall be suitable for the intended use and

shall be subject to approval.

2.1.1 Flap Gates

The Contractor shall furnish and install circular flap gate culverts as shown. Body shall be cast iron, ASTM A 126, with flange face. Resilient neoprene or Buna-N seat shall be firmly bonded in a groove machined in the body to provide a wide seating surface. Flap shall be high test cast iron, ASTM A 126, with spherically dished design. Hinge arms shall be high tensile bronze, ASTM B 584, with silicon bronze ASTM B 98 pins. Each hinge arm shall have two pivot points with adjustable lower pivot for limited rotation and a threaded upper hinge pivot to adjust flap valve sensitivity.

The Contractor shall provide lubrication fitting for each pivot for grease lubrication. Flap gate shall be equal to Rodney Hunt Series FV-AC.

2.1.1.1 Spare Parts for Flap Gate

The Contractor shall furnish the following spare parts:

- 1) Hinge arms (one arm for each size gate).
- 2) Hinge pins (complete replacement for each size gate).
- 3) Resilient seats (complete replacement for each size gate).
- 4) Hinge bushings (if used) (complete replacement for all gates).

2.1.2 Bolts, Nuts, and Washers

Bolts, nuts, and washers shall be of the material, grade, type, class, style and finish indicated or best suited for intended use.

2.1.2.1 High-Strength Bolts, Nuts, and Washers

ASTM A 325, hot-dip galvanized.

2.1.2.2 Bolts, Nuts, and Washers (Other Than High-Strength)

- a. Bolts and Nuts - ASTM A 307, Grade A, hot-dip galvanized.
- b. Washers

All nuts shall be equipped with washers of matching material. Provide beveled washers to give full bearing to bolt head or nut where bolts are to be used on surfaces having slopes greater than 1 in 20 with a plane normal to bolt axis.

2.1.3 Screws

Screws shall be of the material, grade, type, style, and finish indicated or best suited for use intended.

2.1.4 Expansion Anchor Bolts and Adhesive Anchor Bolts

Material shall be ASTM F593 Stainless steel, Type 304 or 316. Provide Type 316 unless noted otherwise. Provide minimum edge distance cover and spacing as recommended by manufacturer, or as indicated on Drawings,

whichever is larger. Depth of embedment: minimum embedment as recommended by manufacturer or nine diameters of bolt, whichever is larger. Notify Contracting Officer if required depth of embedment cannot be achieved at a particular anchor bolt location. Follow manufacturer's recommendations for installation and torque.

Submit manufacturer's load test data to verify at least the anchor bolt capacities at the following embedment depths: (Data must be based on actual tests performed in unreinforced mass concrete of not more than 4000 psi compressive strength. Capacity must be at a concrete temperature of at least 130 Degrees F.

ANCHOR BOLT DIAMETER (INCH)	MINIMUM EMBEDMENT (INCH)	MINIMUM ULTIMATE TENSION CAPACITY (KIP)
1/2	4-1/2	8.1
5/8	5-5/8	11.4
3/4	6-3/4	15.4
7/8	7-7/8	20.1
1	9	24.7
1-1/4	11-1/4	34.3

2.2 SHOP FABRICATED METAL ITEMS

Shop fabricated metal items shall conform to the requirements and details as specified or shown and to the workmanship provisions and other applicable fabrication requirements as specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

PART 3 EXECUTION

3.1 BOLTS TO CONCRETE

3.1.1 Expansion Anchor Bolts and Adhesive Anchor Bolts

Install in strict accordance with manufacturer's instructions for hole size, hole cleaning, installation, torque requirements, substrate temperature and curing. Use only carbide-tipped drilling equipment.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 09 - FINISHES

SECTION 09900

PAINTS AND COATINGS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 QUALITY ASSURANCE
 - 1.3.1 Field Samples and Tests
 - 1.3.1.1 Sampling Procedures
 - 1.3.1.2 Testing Procedure
- 1.4 REGULATORY REQUIREMENTS
 - 1.4.1 Environmental Protection
 - 1.4.2 Lead Content
 - 1.4.3 Chromate Content
 - 1.4.4 Asbestos Content
 - 1.4.5 Mercury Content
 - 1.4.6 Silica
 - 1.4.7 Human Carcinogens
- 1.5 PACKAGING, LABELING, AND STORAGE
- 1.6 SAFETY AND HEALTH
 - 1.6.1 Safety Methods Used During Coating Application
 - 1.6.2 Toxic Materials
- 1.7 ENVIRONMENTAL CONDITIONS
 - 1.7.1 Coatings
- 1.8 COLOR SELECTION
- 1.9 LOCATION AND SURFACE TYPE TO BE PAINTED
 - 1.9.1 Painting Included
 - 1.9.1.1 Exterior Painting
 - 1.9.2 Painting Excluded
 - 1.9.3 Definitions and Abbreviations
 - 1.9.3.1 Qualification Testing
 - 1.9.3.2 Coating
 - 1.9.3.3 DFT or dft
 - 1.9.3.4 DSD
 - 1.9.3.5 EPP
 - 1.9.3.6 EXT
 - 1.9.3.7 INT
 - 1.9.3.8 micron / microns
 - 1.9.3.9 mil / mils
 - 1.9.3.10 mm
 - 1.9.3.11 MPI Gloss Levels
 - 1.9.3.12 MPI System Number
 - 1.9.3.13 Paint

PART 2 PRODUCTS

2.1 MATERIALS

PART 3 EXECUTION

3.1 PROTECTION OF AREAS AND SPACES NOT TO BE PAINTED

3.2 SURFACE PREPARATION

3.3 PREPARATION OF METAL SURFACES

3.3.1 Existing and New Ferrous Surfaces

3.3.2 Final Ferrous Surface Condition:

3.3.3 Non-Ferrous Metallic Surfaces

3.4 APPLICATION

3.4.1 Coating Application

3.4.2 Mixing and Thinning of Paints

3.4.3 Two-Component Systems

3.4.4 Coating Systems

3.5 COATING SYSTEMS FOR METAL

3.6 PAINT TABLES

3.6.1 EXTERIOR PAINT TABLES

-- End of Section Table of Contents --

SECTION 09900

PAINTS AND COATINGS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

ACGIH TLV-BKLT (1991-1992) Threshold Limit Values (TLVs)
for Chemical Substances and Physical
Agents and Biological Exposure Indices
(BEIs)

ACGIH TLV-DOC Documentation of Threshold Limit Values
and Biological Exposure Indices

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A13.1 Scheme for Identification of Piping Systems

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 235 Standard Specification for Mineral Spirits
(Petroleum Spirits) (Hydrocarbon Dry
Cleaning Solvent)

ASTM D 2092 (1995) Preparation of Zinc-Coated
(Galvanized) Steel Surfaces for Painting

ASTM D 4214 (1998) Evaluating the Degree of Chalking
of Exterior Paint Films

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910.1000 Air Contaminants

FEDERAL STANDARDS (FED-STD)

FED-STD-313 (Rev. C) Material Safety Data,
Transportation Data and Disposal Data for
Hazardous Materials Furnished to
Government Activities

FED-STD-595 (1989 Rev B) Color

MASTER PAINTERS INSTITUTE (MPI)

MPI 23	(2001) Surface Tolerant Metal Primer
MPI 72	(2001) Polyurethane, Two Component, Pigmented, Gloss
MPI 79	(2001) Marine Alkyd Metal Primer
MPI 94	(2001) Exterior Alkyd, Semi-Gloss
MPI 101	(2001) Cold Curing Epoxy Primer
MPI 107	(2001) Rust Inhibitive Primer (Water-Based)
MPI 108	(2001) High Build Epoxy Marine Coating
MPI 110	(2001) Interior/Exterior High Performance Acrylic

COMMERCIAL ITEM DESCRIPTION (CID)

CID A-A-2904	Thinner, Paint, Mineral Spirits, Regular and Odorless
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SCIENTIFIC CERTIFICATION SYSTEMS (SCS)

SCS-EPP-SP01-01	(2001) Environmentally Preferable Product Specification for Architectural and Anti-Corrosive Paints
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STEEL STRUCTURES PAINTING COUNCIL (SSPC)

SSPC QP 1	(1989) Evaluating Qualifications of Painting Contractors (Field Application to Complex Structures)
SSPC PA 1	(2000) Shop, Field, and Maintenance Painting
SSPC PA 3	(1995) Safety in Paint Application
SSPC SP 1	(1982) Solvent Cleaning
SSPC SP 2	(1995) Hand Tool Cleaning
SSPC SP 3	(1995) Power Tool Cleaning
SSPC SP 6	(1994) Commercial Blast Cleaning
SSPC SP 7	(1994) Brush-Off Blast Cleaning
SSPC SP 10	(1994) Near-White Blast Cleaning

SSPC SP 12

(1995) Surface Preparation and Cleaning of Steel and Other Hard Materials by High-and Ultra high-Pressure Water Jetting Prior to Recoating

1.2 SUBMITTALS

Submit the following in accordance with Section 01330 SUBMITTAL PROCEDURES:

The current MPI, "Approved Product List" which lists paint by brand, label, product name and product code as of the date of contract award, will be used to determine compliance with the submittal requirements of this specification. The Contractor may choose to use a subsequent MPI "Approved Product List", however, only one list may be used for the entire contract and each coating system is to be from a single manufacturer. All coats on a particular substrate must be from a single manufacturer. No variation from the MPI Approved Products List is acceptable.

Samples of specified materials may be taken and tested for compliance with specification requirements.

In keeping with the intent of Executive Order 13101, "Greening the Government through Waste Prevention, Recycling, and Federal Acquisition", products certified by SCS as meeting SCS-EPP-SP01-01 shall be given preferential consideration over registered products. Products that are registered shall be given preferential consideration over products not carrying any EPP designation.

SD-03 Product Data

Coating

Manufacturer's Technical Data Sheets

SD-04 Samples

Color; G, AE

Submit manufacturer's samples of paint colors. Cross reference color samples to color scheme as indicated.

SD-07 Certificates

Applicator's qualifications

Qualification Testing laboratory for coatings

SD-08 Manufacturer's Instructions

Application instructions

Mixing

Detailed mixing instructions, minimum and maximum application temperature and humidity, potlife, and curing and drying times between coats.

Manufacturer's Material Safety Data Sheets

Submit manufacturer's Material Safety Data Sheets for coatings, solvents, and other potentially hazardous materials, as defined in FED-STD-313.

SD-10 Operation and Maintenance Data

Coatings:

Preprinted cleaning and maintenance instructions for all coating systems shall be provided.

1.3 QUALITY ASSURANCE

1.3.1 Field Samples and Tests

The Contracting Officer may choose up to two coatings that have been delivered to the site to be tested at no cost to the Government. Take samples of each chosen product as specified in the Paragraph SAMPLING PROCEDURES. Test each chosen product as specified in the Paragraph TESTING PROCEDURE. Products which do not conform, shall be removed from the job site and replaced with new products that conform to the referenced specification. Testing of replacement products that failed initial testing shall be at no cost to the Government.

1.3.1.1 Sampling Procedures

The Contracting Officer will select paint at random from the products that have been delivered to the job site for sample testing. The Contractor shall provide one quart samples of the selected paint materials. The samples shall be taken in the presence of the Contracting Officer, and labeled, identifying each sample. Provide labels in accordance with the Paragraph PACKAGING, LABELING, AND STORAGE of this specification.

1.3.1.2 Testing Procedure

The Contractor shall provide Qualification Testing for specified products above to the appropriate MPI product specification, using the third-party laboratory approved under the Paragraph QUALIFICATION TESTING laboratory for coatings. The qualification testing lab report shall include the backup data and summary of the test results. The summary shall list all of the reference specification requirements and the result of each test. The summary shall clearly indicate whether the tested paint meets each test requirement. Note that Qualification Testing may take 4 to 6 weeks to perform, due to the extent of testing required.

1.4 REGULATORY REQUIREMENTS

1.4.1 Environmental Protection

In addition to requirements specified elsewhere for environmental

protection, provide coating materials that conform to the restrictions of the local Air Pollution Control District and regional jurisdiction. Notify Contracting Officer of any paint specified herein which fails to conform.

1.4.2 Lead Content

Do not use coatings having a lead content over 0.06 percent by weight of nonvolatile content.

1.4.3 Chromate Content

Do not use coatings containing zinc-chromate or strontium-chromate.

1.4.4 Asbestos Content

Materials shall not contain asbestos.

1.4.5 Mercury Content

Materials shall not contain mercury or mercury compounds.

1.4.6 Silica

Abrasive blast media shall not contain free crystalline silica.

1.4.7 Human Carcinogens

Materials shall not contain ACGIH TLV-BKLT and ACGIH TLV-DOC confirmed human carcinogens (A1) or suspected human carcinogens (A2).

1.5 PACKAGING, LABELING, AND STORAGE

Paints shall be in sealed containers that legibly show the contract specification number, designation name, formula or specification number, batch number, color, quantity, date of manufacture, manufacturer's formulation number, manufacturer's directions including any warnings and special precautions, and name and address of manufacturer. Pigmented paints shall be furnished in containers not larger than 5 gallons. Paints and thinners shall be stored in accordance with the manufacturer's written directions, and as a minimum, stored off the ground, under cover, with sufficient ventilation to prevent the buildup of flammable vapors, and at temperatures between 40 to 95 degrees F.

1.6 SAFETY AND HEALTH

Apply coating materials using safety methods and equipment in accordance with the following:

Work shall comply with applicable Federal, State, and local laws and regulations, and with the ACCIDENT PREVENTION PLAN, including the Activity Hazard Analysis as specified in the Contract Documents and in Appendix A of COE EM-385-1-1. The Activity Hazard Analysis shall include analyses of the potential impact of painting operations on painting personnel and on others

involved in and adjacent to the work zone.

1.6.1 Safety Methods Used During Coating Application

Comply with the requirements of SSPC PA 3.

1.6.2 Toxic Materials

To protect personnel from overexposure to toxic materials, conform to the most stringent guidance of:

- a. The applicable manufacturer's Material Safety Data Sheets (MSDS) or local regulation.
- b. 29 CFR 1910.1000.
- c. ACGIH TLV-BKLT, threshold limit values.

1.7 ENVIRONMENTAL CONDITIONS

1.7.1 Coatings

Do not apply coating when air or substrate conditions are:

- a. Less than 5 degrees F above dew point;
- b. Below 50 degrees F or over 95 degrees F, unless specifically pre-approved by the Contracting Officer and the product manufacturer. Under no circumstances shall application conditions exceed manufacturer recommendations.

1.8 COLOR SELECTION

Colors of finish coats shall be as indicated or specified. Where not indicated or specified, colors shall be selected by the Contracting Officer. Manufacturers' names and color identification are used for the purpose of color identification only. Named products are acceptable for use only if they conform to specified requirements. Products of other manufacturers are acceptable if the colors approximate colors indicated and the product conforms to specified requirements.

1.9 LOCATION AND SURFACE TYPE TO BE PAINTED

1.9.1 Painting Included

Where a space or surface is indicated to be painted, include the following unless indicated otherwise.

- a. Surfaces behind portable objects and surface mounted articles readily detachable by removal of fasteners, such as screws and bolts.
- b. New factory finished surfaces that are damaged during performance of the work.

- c. Existing coated surfaces that are damaged during performance of the work.

1.9.1.1 Exterior Painting

Includes new surfaces of the appurtenances as indicated.

1.9.2 Painting Excluded

Do not paint the following unless indicated otherwise.

- a. Concrete
- b. Metals fully embedded in concrete (except aluminum)
- c. Galvanized steel items.
- d. Copper, stainless steel, aluminum, brass, and lead except existing coated surfaces.
- e. Aluminum items, including guardrail.

1.9.3 Definitions and Abbreviations

1.9.3.1 Qualification Testing

Qualification testing is the performance of all test requirements listed in the product specification. This testing is accomplished by MPI to qualify each product for the MPI Approved Product List, and may also be accomplished by Contractor's third party testing lab if an alternative to Batch Quality Conformance Testing by MPI is desired.

1.9.3.2 Coating

A film or thin layer applied to a base material called a substrate. A coating may be a metal, alloy, paint, or solid/liquid suspensions on various substrates (metals, plastics, wood, paper, leather, cloth, etc.). They may be applied by electrolysis, vapor deposition, vacuum, or mechanical means such as brushing, spraying, calendering, and roller coating. A coating may be applied for aesthetic or protective purposes or both. The term "coating" as used herein includes emulsions, enamels, stains, varnishes, sealers, epoxies, and other coatings, whether used as primer, intermediate, or finish coat. The terms paint and coating are used interchangeably.

1.9.3.3 DFT or dft

Dry film thickness, the film thickness of the fully cured, dry paint or coating.

1.9.3.4 DSD

Degree of Surface Degradation, the MPI system of defining degree of surface

degradation. Five (5) levels are generically defined under the Assessment sections in the MPI Maintenance Repainting Manual.

1.9.3.5 EPP

Environmentally Preferred Products, a standard for determining environmental preferability in support of Executive Order 13101.

1.9.3.6 EXT

MPI short term designation for an exterior coating system.

1.9.3.7 INT

MPI short term designation for an interior coating system.

1.9.3.8 micron / microns

The metric measurement for 0.001 mm or one/one-thousandth of a millimeter.

1.9.3.9 mil / mils

The English measurement for 0.001 in or one/one-thousandth of an inch, equal to 25.4 microns or 0.0254 mm.

1.9.3.10 mm

The metric measurement for millimeter, 0.001 meter or one/one-thousandth of a meter.

1.9.3.11 MPI Gloss Levels

MPI system of defining gloss. Seven (7) gloss levels (G1 to G7) are generically defined under the Evaluation sections of the MPI Manuals. Traditionally, Flat refers to G1/G2, Eggshell refers to G3, Semigloss refers to G5, and Gloss refers to G6.

Gloss levels are defined by MPI as follows:

Gloss Level	Description	Units @ 60 degrees	Units @ 85 degrees
G1	Matte or Flat	0 to 5	10 max
G2	Velvet	0 to 10	10 to 35
G3	Eggshell	10 to 25	10 to 35
G4	Satin	20 to 35	35 min
G5	Semi-Gloss	35 to 70	
G6	Gloss	70 to 85	
G7	High Gloss		

Gloss is tested in accordance with ASTM D 523. Historically, the Government has used Flat (G1 / G2), Eggshell (G3), Semi-Gloss (G5), and Gloss (G6).

1.9.3.12 MPI System Number

The MPI coating system number in each Division found in either the MPI Architectural Painting Specification Manual or the Maintenance Repainting Manual and defined as an exterior (EXT/REX) or interior system (INT/RIN). The Division number follows the CSI Master Format.

1.9.3.13 Paint

See Coating definition.

PART 2 PRODUCTS

2.1 MATERIALS

Conform to the coating specifications and standards referenced in PART 3. Submit manufacturer's technical data sheets for specified coatings and solvents.

PART 3 EXECUTION

3.1 PROTECTION OF AREAS AND SPACES NOT TO BE PAINTED

Prior to surface preparation and coating applications, remove, mask, or otherwise protect, hardware, hardware accessories, machined surfaces, radiator covers, plates, lighting fixtures, public and private property, and other such items not to be coated that are in contact with surfaces to be coated. Following completion of painting, workmen skilled in the trades involved shall reinstall removed items. Restore surfaces contaminated by coating materials, to original condition and repair damaged items.

3.2 SURFACE PREPARATION

Remove dirt, splinters, loose particles, grease, oil, and other foreign matter and substances deleterious to coating performance as specified for each substrate before application of paint or surface treatments. Oil and grease shall be removed prior to mechanical cleaning. Cleaning shall be programmed so that dust and other contaminants will not fall on wet, newly painted surfaces. Exposed ferrous metals such as nail heads on or in contact with surfaces to be painted with water-thinned paints, shall be spot-primed with a suitable corrosion-inhibitive primer capable of preventing flash rusting and compatible with the coating specified for the adjacent areas.

3.3 PREPARATION OF METAL SURFACES

3.3.1 Existing and New Ferrous Surfaces

- a. Ferrous Surfaces including Shop-coated Surfaces and Small Areas That Contain Rust, Mill Scale and Other Foreign Substances:
Solvent clean or detergent wash in accordance with SSPC SP 1 to remove oil and grease. Where shop coat is missing or damaged, clean according to SSPC SP 2, SSPC SP 3, or SSPC SP 6.

Shop-coated ferrous surfaces shall be protected from corrosion by treating and touching up corroded areas immediately upon detection.

3.3.2 Final Ferrous Surface Condition:

For tool cleaned surfaces, the requirements are stated in SSPC SP 2 and SSPC SP 3. As a visual reference, cleaned surfaces shall be similar to photographs in SSPC VIS 3.

For abrasive blast cleaned surfaces, the requirements are stated in SSPC SP 7, SSPC SP 6, and SSPC SP 10. As a visual reference, cleaned surfaces shall be similar to photographs in SSPC VIS 1.

For waterjet cleaned surfaces, the requirements are stated in SSPC SP 12. As a visual reference, cleaned surfaces shall be similar to photographs in SSPC VIS 4.

3.3.3 Non-Ferrous Metallic Surfaces

Aluminum and aluminum-alloy, galvanized, lead, copper, and other nonferrous metal surfaces.

- a. Surface Cleaning: Solvent clean in accordance with SSPC SP 1 and wash with mild non-alkaline detergent to remove dirt and water soluble contaminants.

3.4 APPLICATION

3.4.1 Coating Application

Painting practices shall comply with applicable federal, state and local laws enacted to insure compliance with Federal Clean Air Standards. Apply coating materials in accordance with SSPC PA 1. SSPC PA 1 methods are applicable to all substrates, except as modified herein.

At the time of application, paint shall show no signs of deterioration. Uniform suspension of pigments shall be maintained during application.

Unless otherwise specified or recommended by the paint manufacturer, paint may be applied by brush, roller, or spray. Rollers for applying paints and enamels shall be of a type designed for the coating to be applied and the surface to be coated.

Paints, except water-thinned types, shall be applied only to surfaces that are completely free of moisture as determined by sight or touch.

Thoroughly work coating materials into joints, crevices, and open spaces. Special attention shall be given to insure that all edges, corners, crevices, welds, and rivets receive a film thickness equal to that of adjacent painted surfaces.

Each coat of paint shall be applied so dry film shall be of uniform thickness and free from runs, drops, ridges, waves, pinholes or other voids, laps, brush marks, and variations in color, texture, and finish.

Hiding shall be complete.

Touch up damaged coatings before applying subsequent coats.

- a. Drying Time: Allow time between coats, as recommended by the coating manufacturer, to permit thorough drying, but not to present topcoat adhesion problems. Provide each coat in specified condition to receive next coat.
- b. Primers, and Intermediate Coats: Do not allow primers or intermediate coats to dry more than 30 days, or longer than recommended by manufacturer, before applying subsequent coats. Follow manufacturer's recommendations for surface preparation if primers or intermediate coats are allowed to dry longer than recommended by manufacturers of subsequent coatings. Each coat shall cover surface of preceding coat or surface completely, and there shall be a visually perceptible difference in shades of successive coats.
- c. Finished Surfaces: Provide finished surfaces free from runs, drops, ridges, waves, laps, brush marks, and variations in colors.

3.4.2 Mixing and Thinning of Paints

Reduce paints to proper consistency by adding fresh paint, except when thinning is mandatory to suit surface, temperature, weather conditions, application methods, or for the type of paint being used. Obtain written permission from the Contracting Officer to use thinners. The written permission shall include quantities and types of thinners to use.

When thinning is allowed, paints shall be thinned immediately prior to application and in accordance with the manufacturer's instructions. The use of thinner shall not relieve the Contractor from obtaining complete hiding, full film thickness, or required gloss. Thinning shall not cause the paint to exceed limits on volatile organic compounds. Paints of different manufacturers shall not be mixed.

3.4.3 Two-Component Systems

Two-component systems shall be mixed in accordance with manufacturer's instructions. Any thinning of the first coat to ensure proper penetration and sealing shall be as recommended by the manufacturer for each type of substrate.

3.4.4 Coating Systems

- a. Systems by Substrates: Apply coatings that conform to the respective specifications listed in the following Tables:

Table

Division 5. Exterior Metal, Ferrous and Non-Ferrous Paint Table

- b. Minimum Dry Film Thickness (DFT): Apply paints, primers,

varnishes, enamels, undercoats, and other coatings to a minimum dry film thickness of 1.5 mil each coat unless specified otherwise in the Tables. Coating thickness where specified, refers to the minimum dry film thickness.

- c. Coatings for Surfaces Not Specified Otherwise: Coat surfaces which have not been specified, the same as surfaces having similar conditions of exposure.
- d. Existing Surfaces Damaged During Performance of the Work, Including New Patches In Existing Surfaces: Coat surfaces with the following:
 - (1) One coat of primer.
 - (2) One coat of undercoat or intermediate coat.
 - (3) One topcoat to match adjacent surfaces.

3.5 COATING SYSTEMS FOR METAL

Apply coatings of Tables in Division 5 for Exterior.

- a. Apply specified ferrous metal primer on the same day that surface is cleaned, to surfaces that meet all specified surface preparation requirements at time of application.
- b. Shop-primed Surfaces: Touch up exposed substrates and damaged coatings to protect from rusting prior to applying field primer.

3.6 PAINT TABLES

All DFT's are minimum values.

3.6.1 EXTERIOR PAINT TABLES

DIVISION 5: EXTERIOR METAL, FERROUS AND NON-FERROUS PAINT TABLE

STEEL / FERROUS SURFACES

A. New Steel that has been hand or power tool cleaned to SSPC SP 2 or SSPC SP 3 or brush-off blast cleaned to SSPC SP 7 including flap gates, nongalvanized iron, steel pipe, and fittings.

1. Alkyd

New; MPI EXT 5.1Q-G5 (Semigloss) Existing; MPI REX 5.1D-G5

Primer:	Intermediate:	Topcoat:
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MPI 23	MPI 94	MPI 94
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System DFT: 5.25 mils

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 10 - SPECIALTIES

SECTION 10430

EXTERIOR SIGNAGE

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 MEASUREMENT AND PAYMENT
- 1.3 GENERAL
- 1.4 SUBMITTALS

PART 2 PRODUCTS

- 2.1 Materials

PART 3 EXECUTION

- 3.1 GENERAL

-- End of Section Table of Contents --

SECTION 10430

EXTERIOR SIGNAGE

PART 1 GENERAL

1.1 REFERENCES

Exterior signage construction and materials shall meet the requirements specified in the 2000 Minnesota Department of Transportation Standard Specifications for Construction.

MINNESOTA DEPARTMENT OF TRANSPORTATION (Mn/DOT)

Mn/DOT 2564

Traffic Signs and Devices

1.2 MEASUREMENT AND PAYMENT

Mn/DOT Standard Specifications for Construction referenced above shall be followed for all construction, quality and testing procedures. The Mn/DOT Standard Specifications for Construction will not be followed when referencing to measurement, payment and deductions of the contract unit price. In addition, all testing will be the responsibility of the Contractor. Any reference in the Mn/DOT Standard Specifications to testing to be done by the Department shall be replaced with testing to be done by the Contractor.

1.3 GENERAL

All exterior signage shall be provided by a single manufacturer. Exterior signage shall be of the design, detail, sizes, types, and message content shown on the drawings, shall conform to the requirements specified, and shall be provided at the locations indicated. Signs shall be complete with lettering, framing as detailed, and related components for a complete installation. Recyclable materials shall conform to EPA requirements in accordance with Section 01670 RECYCLED/RECOVERED MATERIALS.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Approved Detail Drawings; G, AE

Drawings showing elevations of each type of sign; dimensions, details, and methods of mounting or anchoring; shape and thickness of materials; and details of construction. A schedule showing the location, each sign type, and message shall be included.

Drawings will be submitted indicating existing signs that will be impacted by construction. Plan shall include information indicating if existing signs will be reset or replaced.

SD-03 Product Data

The Contractor shall submit product information and certification that verifies that sign materials and installation meet the requirements specified in the Mn/DOT Standard Specifications.

Modular Exterior Signage System

Manufacturer's descriptive data and catalog cuts.

Installation

Manufacturer's installation instructions and cleaning instructions.

Exterior Signs

Exterior signage schedule in electronic media with spread sheet format. Spread sheet shall include sign location, sign type, and message.

SD-10 Operation and Maintenance Data

Protection and Cleaning

Six copies of maintenance instructions listing routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides. The instructions shall include simplified diagrams for the equipment as installed.

PART 2 PRODUCTS

2.1 Materials

Exterior signage shall consist of a system of coordinated directional, identification, and regulatory type signs located where shown. Dimensions, details, materials, message content, and design of signage shall be as shown. All materials shall meet the requirements of Mn/DOT 2564.

PART 3 EXECUTION

3.1 GENERAL

Manufacturing, testing, and construction of signage shall meet the requirements of the Mn/DOT Standard Specifications for Construction, Section 2564.

Existing signs impacted by construction shall be removed and replaced or reset to conform to existing conditions. Any existing signs that are damaged during construction shall be replaced.

-- End of Section --